RAILROAD GAZETTE

FRIDAY, MAY 1.

Eastern Railroad Association.

The report of this Association for the year ending Dec. 31 last gives, as usual, a list of a very large number of patents examined and reported on. In addition to this, reports were made on the general subjects of Duplex, Quadruplex and Multiplex Electric Telegraph; Electric Accumulators or Storage Batteries; Electric Annunciators and Chemical Fire Extinguishers. Reports were also made on a number of unpatented devices submitted for examination, including designs for brakes, brake-shoes, car-wheel grinding machines, spark arresters, switches, semaphore signals, etc., etc.

The report of the Executive Committee gives the following statement of the business of the Association for the year:

The number of patents for inventions examined and reported on during the year exceeded that of any previous year since the organization of the Association, and the great variety of subjects covered by the reports is remarkable, as it shows that the railroads are progressively adopting not only new improvements in the older arts, but new arts heretofore unknown to railroad practice.

Another fact worthy of note in this connection is, that in addition to reports on patents, a large amount of work has been accomplished in the examination of new machines and appliances invented by employés of our members, with a view to ascertain their status with relation of the state of the art, as shown by prior patents and publications, and thereby determine if they constituted proper subjects for the grant of the letters-patent, and whether the use of such new devices would by an infringement of existing patents. The large increase in this branch of the business, and the satisfactory nature of the reports furnished on the questions submitted, indicate that the services of the Association, in this comparatively new field of operation, are fully appreciated, and have proved of such substantial and material benefit to the members as to warrant a continuance of our organization, even if no other service was rendered or benefits received.

Lists of all subjects considered and passed upon at each meeting of the Executive Committee are forwarded to the members as soon thereafter as practicable, so that information can be had respecting them without delay, on making application to the general office.

In making these investigations and reports on patents and unpatented devices, it is the aim of the Association to furnish the proper officers with reliable information as to what improvements may or may not be safely used; the legal rights of patentees being duly considered, to determine what machines or appliances may be freely used, and what must be paid for, if used without authority from the inventors or owners of patents.

To have such information at command is a privilege the value of which cannot be estimated in dollars and cents; but the increased demand is evidence that its value is appreciated.

In order, however, to render such information valuable to its fullest extent, it is necessary to protect the members in the use of any improvement which has been adopted in consequence of such advice, by resisting any adverse claim, and it is in affording such protection that the Association has proved of the greatest service.

All claims for infringement of patents which your Committee considered unjust or untenable have been resisted by the Association; how successfully, the members are well aware.

The result of this branch of the business during the year 1884 shows continued success, and the year is marked by the termination of the litigation concerning one of the most important of the many claims resisted.

What is commonly known as the Swing Truck Case has been referred to in many previous reports, and, as it affords one of the best examples on record to illustrate the beneficial effect of the Association in protecting the members against unjust claims, a brief history of the case will be of interest.

The claim was based upon the alleged infringement of a patent originally granted to Alba F. Smith for an improvement in trucks for locomotives, Feb. 11, 1862.

It was referred to the Association by the Pennsylvania Railroad Co., and the Committee, after full investigation, reported the patent invalid for lack of novelty, and notified the Pennsylvania Railroad Co. that the Association would defend the members if sued.

The owners of the patent first sued the Erie Railway Co. (not a member), and obtained a judgment against said road on the opinion of Mr. Justice Blatchford sustaining the patent.

Suit was commenced against the Pennsylvania Railroad Co. March 6, 1873, shortly after which the Committee met to consider the situation, and decided to adhere to its former decision, notwithstanding the adverse decision in the Erie case.

Some time in 1874 the decision of the Circuit Court was reached, the patent being again sustained on the opinion of Mr. Justice Strong, and the case was referred to a Master to assess the damages. In the spring of 1880, the Master reported damages against the Pennsylvania Railroad Co. to the amount of $89,644, with interest from date of use.

This finding was confirmed by the Court, and after consultation it was decided to take an appeal to the United States Supreme Court.

Meanwhile the owners of the patent commenced eleven other suits against members, and threatened others, it being ascertained that there were in all 34 railroad companies in the Association liable to be sued for infringement.

The damages estimated on the findings in the Pennsylvania Railroad Co. suit aggregated about $250,000.

It was also ascertained that large amounts had been paid in settlement of claims by a number of railroads not members of this Association.

Notwithstanding all of these adverse circumstances, your Committee, believing in the soundness of its opinion originally given, adhered to its original decision, and declined to settle with the owners of the patent on the compromise terms offered.

The decision of the United States Supreme Court was announced March 3, 1884, and by it the patent was held to be void for lack of novelty, thereby fully sustaining your Committee and justifying the Association in its defence of the members sued.

The other suits disposed of as a result of the termination of this litigation were: Locomotive Engine Safety Truck Co. *vs.* Boston Concord & Montreal; Philadelphia & Reading; Old Colony; Northern (N. H.); Concord; Central Vermont; North Pennsylvania; Boston & Maine; Lehigh Coal & Navigation Co.; Maine Central; and Lehigh Valley.

It is interesting to know that the saving effected by the successful litigation of this claim amounts to more than th expenditures of the Association since its organization in 1867.

Another suit brought to a successful termination may be noted, not so much on account of the amount involved, but because of the peculiar nature of the question at issue.

A patent was granted to Mr. George Richards, Feb. 24, 1874, for an improvement in perches for dumping cars, which was examined and accepted as valid.

The device was new, so far as any record evidence showed to the contrary, and the improvement began to go into use in the New England states.

The Eastern Railroad Co. ordered some cars with the improved perches from the Portland Locomotive Works, and when the specifications and drawings were forwarded it was found that cars having perches of the same construction had been made for the Panama Railroad Co. years before Mr. Richards' invention.

The cars were not used in this country, however, and the fact of their having been constructed at all was known only to the employés of the Portland Co.

Under these circumstances the question was asked, Did such prior knowledge invalidate the patent?

Your Committee was advised that if those cars were made in this country, and the perches were the same as described in the patent, and were complete structures, capable of being used when fitted to the cars, it was sufficient to invalidate the patent for want of novelty, and the members were therefore advised not to pay further royalty until the question was adjudicated in a court of competent jurisdiction.

On behalf of the patent it was contended that prior knowledge without proof of use in this country would not invalidate a patent, for the reason that without use utility was not demonstrated, and so the invention could not be said to be completed until used practically.

Authorities were found to support both propositions, but the distinction made by your counsel, viz., between cases where the capacity of the thing for use was evident to the senses and cases where actual operation is necessary to demonstrate utility, was held to be good law, and applicatory to this particular case.

The patent was therefore held to be void for lack of novelty by the court.

In addition to the above-mentioned cases, the litigation respecting certain old cases has been terminated, to wit:

Turrill *vs.* Fitchburg Railroad Co. for infringement of the Cawood Swage-block patent; and

Emigh and Stevens *vs.* Baltimore & Ohio Railroad Co. for infringement of the Stevens car-brake patent.

As both of said patents had been previously sustained by the United States Supreme Court in cases brought against railroads not members of the Association, and as there was no prospect of successfully contesting their validity, the efforts of the Association were directed to the mitigation of the claims for damages which were considered excessive. Very material reductions were secured by our efforts in this direction, and we are informed that satisfactory settlements have been effected.

The only new suits commenced during the year, the defense of which has been adopted by the Association, are: Ezra Miller *vs.* Pittsburgh, Fort Wayne & Chicago; A. V. Hartwell and I. D. Johnson *vs.* New York, New Haven & Hartford Co.; G. N. Reiff and J. P. Rees *vs.* Pennsylvania Railroad Co.

The issue in the first of these cases is the same as in Miller *vs.* Pennsylvania Railroad Co., pending in New York. We are advised that the defense is complete, and that, so far as defendants are concerned, both cases are ready for trial.

The other cases are not considered of much importance; that of Hartwell and Johnson being for alleged infringement of patents for drying sand by means of a stove provided with a hopper for containing the sand, and the Reiff and Rees case for alleged infringement of a patent elevator guard. We are assured that the defense is good in both instances.

The Green Driven Well cases remain in *statu quo*, awaiting the decision of the United States Supreme Court in similar cases now before it.

Some cases of minor importance are ready for trial, and you will most likely be finally disposed of during the year 1885. The members will be advised as to the nature of the decision in each case as soon as rendered.

With respect to proceedings in Congress, your counsel was fully advised of matters referred to the Committee on Patents, and for proper reasons was enabled to successfully oppose all the bills for extension of letters-patent which might have affected the railroads.

Lists of patents examined and reported upon during the year, and patents previously reported on which have expired during the year, are hereto attached for convenience of reference.

The Treasurer reports as follows:

Balance Dec. 31, 1883	$56,430
Assessments for 1884	22,822
Interest on investments	2,247
Total	$81,499
Disbursements during 1884	24,898
Credit balance Dec. 31, 1884	$56,601

As compared with last year's statement, this shows an increase in the revenues from all sources of $430, an increase in the surplus of $170 and an increase in the expenditures of $6,661.

The increase in the amount of expenditures is due to extraordinary disbursements in the legal expense account, mainly incurred in the preparation and argument of the swing-truck case in the United States Supreme Court, and in preparing for the trial of the Ezra Miller cases in New York and Chicago.

As noted in last year's report, it is impossible to estimate the yearly expenditure on account of legal expenses. For the year 1883 it only amounted to $1,636, the lowest on record, while for the year 1884 it amounts to $8,608.

But as all of the outlay on account of the swing-truck case in 1884 was incurred for services rendered in 1883, it will be obvious that no correct estimate can be formed from the aggregate expenditure of each year separately considered.

With the help of the interest account our income has exceeded our expenditures, so that no encroachment has been made upon our invested funds, but as it exceeded the amount of assessment collected, we think it would not be advisable to make any reduction in the rate of assessment for the year 1885; and therefore recommend that the same be fixed, as heretofore, at 50 cents per mile in length, and $50 upon each $1,000,000 of gross receipts, based upon all roads operated by each member, through ownership, lease, or operating agreements.

English and American Fast Trains.

The *Pall Mall Gazette* says:

A well-informed correspondent sends us the following to correct what he calls the misleading statements of Mr. Bigelow on the speed of the English and American railways, published in the *Pall Mall Gazette* a short time ago:

"Your correspondent says: 'The run from New York to Albany is 149 miles in 3½ hours.' Remarking that the distance is only 142 miles, we find that only one train daily performs the journey in 3¼ hours, and this is the Chicago special, of which more anon. From New York to Albany there are 10 trains daily—I only give them one way in each case—all called express, with an average time of 4 hours 47½ minutes, and a journey speed of 29⅝ miles per hour. The track follows the course of the Hudson nearly the whole way, and is almost a dead level. Compare this with the 'Great Northern,' London to Sheffield, an infinitely harder course: 9 trains in 3 hours 39½ minutes—162 miles and an average journey speed of 44½ miles per hour—the fastest does the journey in 3 hours 23 minutes, and last summer did it in 3 hours 12 minutes, a journey speed of over 50 miles an hour. Next, New York to Boston may fairly be compared with the accommodation between London and Manchester. Mr. Foxwell gives 20 expresses from London to Manchester, all trains with third-class carriages, with an average journey speed of nearly 41 miles. The fastest last year, the Great Northern expresses, 203 miles in 4 hours 15 minutes, or a journey speed of 47¾ miles. The two lines running directly between New York and Boston give only 8 trains daily, marked express, distance 233 miles, and a very much easier course than the Great Northern, average time 7 hours 16 minutes, giving a journey speed of only 32¾ miles. The fastest, a train limited to Pullman cars, would not be called an express at all in England, its speed being 38¾ miles. New York and Pittsburgh may be compared with London to Glasgow. The former route has 5 trains daily, marked express (one of them the Chicago limited), distance 444 miles, average time, 14 hours 49 minutes, speed just under 30 miles an hour. Fastest 12 hours, journey speed 37 miles. London to Glasgow, 13 expresses—distance 401 to 440 miles, average speed of all 38¾ miles, and all but one have third-class carriages. Fastest, which may be called a limited train, 440 miles in 10 hours 20 minutes, a journey speed of 42.5 miles. A word as to the two Chicago specials run as limited trains, and by which a large extra fare is charged. I asked a 'railroad' agent in the States what their speed was, and he replied, '50 miles an hour right through.' Mr. Bigelow says they run from New York to Chicago in 24 hours, both of them really taking 26½ hours. One is run by the Pennsylvania Railroad, and has a distance of 912 miles to travel; the other by the New York Central, and about 977 miles, giving speeds of 34.4 and 36.8 miles per hour. These trains are only for those who can afford to pay a high fare, and for accommodation to the general public compare badly with the third-class trains to Glasgow; the American, with a daily distance of nearly 1,900 miles at a speed of 35.5 miles; the English trains running upward of 5,000 miles, at an average speed of nearly 39 miles. As might be expected, the fastest traveling in America is between the two largest towns, New York and Philadelphia; taking all trains both ways that make the journey at over 40 miles an hour, I find there are 14 by the Pennsylvania, with an average speed of 42.9 miles, and 6 by the Bound Brook route, with an average of 42¼ miles. Between Liverpool and Manchester, much smaller towns, there are 52 trains daily at a greater speed: 32 by the Manchester, Sheffield & Lincoln Co., 4 averaging 51¼ miles, and 28 45¾ miles, and 20 by the London & Northwestern at a speed of 45 miles. For the above comparisons every train in America that has a speed of over 40 miles an hour for any part of its course has been used; but although the result is so very much in favor of the speed of English trains, not one-half of the latter have been brought into requisition. The fact is, the Americans do not know how slow their trains are, and it is quite time the idea that their 'lightning expresses' and 'thunderbolt trains' eclipse everything else in the world was exploded. Compared with the best trains in America, the English ones exceed them in speed quite 25 per cent., and if one goes for instances to anywhere more than 500 miles from New York the comparison becomes absurd."

The Detection of Loose Rivets.

The following is an abstract of a very practical paper read by Mr. James Sanderson before the Engineering Society of Michigan:

The rivet as at present used is subject to certain disadvantages and accidents of workmanship, which it is the business of the inspector to detect, and of the engineer to remedy or to prevent. An important drawback is the liability to looseness. Most rivets carry transverse shear, joining parts of an engineering structure together at right angles to the principal lines of stress. If a rivet be loose, and its shank separated by an appreciable space from the sides of the hole which it is supposed to fill, it is evident that it cannot take up the shear intended for it, and that its hole might as well be empty. To detect this looseness in rivets, so as to have the matter corrected, is part of the inspector's duty. But if means can be found to insure the tightness of rivets in the first place, the results will be far superior to those produced by any amount of cutting out and replacing.

It is impossible to lay down any infallible rules as to the parts of iron or steel structures where most loose rivets are to be found. The few general statements below will prove true in the long run, but are only to be taken as expressions of the average result.

1. Hand-driven rivets are more apt to be loose than those driven by power, and are more irregularly loose. Loose power-driven rivets are likely (if numerous) to occur in groups and series; while loose hand-driven rivets will probably be scattered without any regularity.

2. Countersunk rivets are more apt to be loose than those with ordinary round heads. Rivets countersunk on both sides are difficult to test for lateral looseness, but they will frequently move longitudinally in the hole, which is not true of most full-headed rivets.

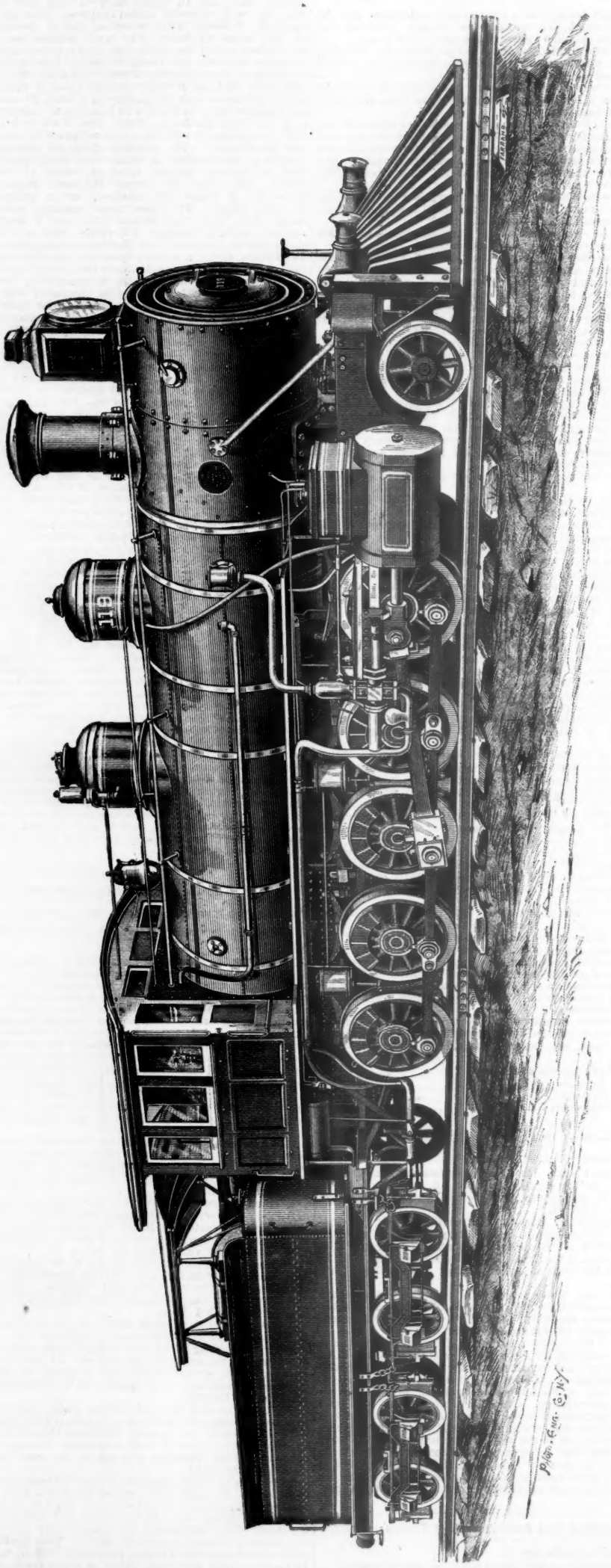
3. Rivets connecting thick plates, or pieces of metal, are more likely to be loose than those in lighter work.

4. Rivets holding lattice-bars or light cover-plates to flanges of channels, etc., are very seldom loose. If, however, a rivet passes through several thicknesses of metal, its liability to looseness is increased in proportion to the extra thickness of metal passed through.

5. Pin-plates, and other reinforcing plates, especially when fastened by staggered rivets close together, are likely to have some loose ones. In general, the closer the rivets together, the more apt are some of them to be loose. In long, regularly spaced rows the rivets are less apt to be loose than when crowded or bunched.

6. In rows of rivets, those at or near the ends are most apt to be loose. When the end rivet of the row is tight, a loose one may frequently be found second or third from the end.

7. When rivets have to be cut out and others replaced, the shock of the cutting and redriving is very apt to loosen neighboring rivets, previously tight. This makes a loose rivet a spreading evil which is peculiarly difficut to remedy. In hand-riveting, any rivet, either of whose heads is hard to get at for the purpose of holding or heading up, is likely to prove loose. It is difficut to make a tight rivet at or very near the angle of a bent piece, or at any point where it is not easy to bring the parts together. A rivet, in order to be tight, should fit the hole as closely as possible before driving, and should be long enough to admit of being well



THE LOCOMOTIVE "DECAPOD," FROM THE BALDWIN LOCOMOTIVE WORKS.

headed up when in the hole. A small, half-formed head is a frequent accompaniment of a loose shank.

8. Rivets holding together a large number of moderately thick plates are not especially apt to seem loose under the hammer. It is doubtful, however, if such rivets actually fill the holes; probably a section would show the rivet to be bent in the hole, and so held apparently tight, while not actually so.

9. A fairly punched and reamed hole is more apt to contain a tight rivet than is an irregular hole; but drilled holes will not prevent loose rivets, or even greatly diminish their number. In a rough hole, a slight looseness may not be detected, as a rivet may be jammed between projecting points; while, in a smooth drilled hole the slightest space between the rivet and the surrounding metal will cause motion under the hammer.

10. Loose rivets cannot be foretold, and can only be detected by actual test, each rivet being struck with a hammer. The motion indicating looseness is more reliably ascertained by touch than by sight or sound. Strike a couple of blows with a hammer on each side of the rivet-head, placing the finger, at the same time, on the opposite side of the head, and in contact with the surface of the plate or piece riveted, so as to feel the motion, if any, between the rivet-head and the solid metal. The motion is much more readily felt by touching the head which is struck, than by holding the opposite head of the rivet, as is sometimes done. Looseness is also more readily detected by striking the original head of the rivet than by striking the head which is made in riveting.

In inspecting rivets countersunk on both sides, the only possible test is obtained by striking directly on the head of the rivet, at the same time placing the fingers on the opposite head, to detect longitudinal motion. This should be done, if possible, from both sides of the part riveted.

A light hammer (about one or 1½ lbs.) is preferable to a heavy one. The blows struck should not be too strong, but such as may be struck freely from the wrist.

The Locomotive "Decapod."

The accompanying illustration represents a locomotive recently constructed at the Baldwin Locomotive Works in Philadelpha, for working a mountain grade on a Brazilian railroad. This engire shares with the Southern Pacific monster, "El Gobernador,"* the proud title of the most powerful locomotive in the world.

Several particulars as regards the weight and general dimensions of the "Decapod" have been already given in our columns, but for the convenience of our readers we append the following leading dimensions:

	lbs.
Actual weight in working ord-r exclusive of tender	144,.00
Actual weight on driving wheels	128,000
Estimated weight of engine and tender in working order	224.000
Cylinders	22 in × 26 in.
Drivers, diameter on tread	45 in.
Total wheel base	24 ft. 6¼ in.
Driving wheel base	16 ft. 11½ in.
Boiler, diameter	64 in
" thickness of plates	⅝ in.
Firebox, inside length	121 in.
" " width	39½i n.
Tubes, number	2 8
" material	steel
" diameter outside	2 in.
" length	12 ft. 9¼ in.
Tank capacity, gallons	3,500
Tractive force per lb. average pressure in cylinders	279.6 lbs.

The boiler is probably the largest ever made for a locomotive, and the same seems true of many of the other parts. The piston rod is 4 in. diameter, and the main crank-pins 6 in. diameter. The Laird cross-head is cast-steel, and the slide-bars cast-iron. The reverse gear is a combination of screw and lever, so arranged that either may be used.

It will be noticed that as the engine is to work in a hot climate, the fireman is protected from the sun by a roof over the front part of the tender.

It is estimated that the engine will haul 500 gross tons, or 1,120,000 lbs. of cars and lading up a straight grade of 105.6 ft. per mile.

Contributions.

Michigan Central Standard Angle-Bar and Track.

Detroit, Mich., Feb. 10, 1885.

To the Editor of the Railroad Gazette:

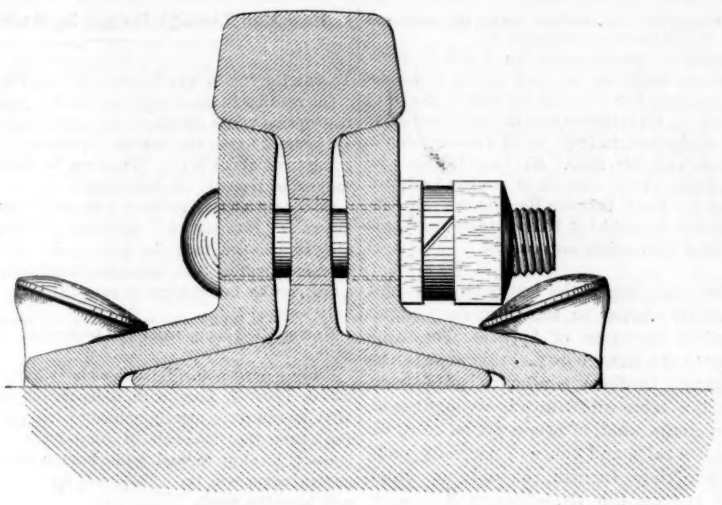
The weak point of the whole track system is the joint. It is safe to say that one-quarter of the expense of labor on track could be saved if rails were continuous, and perhaps within the mark to include in the statement the cost of rails, ties and ballast as things on which this one-quarter saving could be effected if there were no opening at the joint, with its attendant weakness. Add to this the amount that could be saved on car repairs and the saving made by hauling additional cars, and the sum expresses the cost to the railroads of the joint opening. It is certain that any device that does not entirely do away with the joint opening will be lacking in qualities needed for a perfect joint.

With the square end rails the most that can be done is to reduce the blow at the joint and the expense of the blow to a minimum. The Michigan Central standard track and joints have some points of superiority over forms in general use. The rail weighs 65 lbs. per yard. It is not well shaped on the head, as there is not sufficient bearing surface for the splices, but a change in shape was not considered advisable this year as it is hoped a standard rail section will be adopted by maintenance-of-way men in the near future. The track is laid with 9-ft. ties. Double tracks are 13 ft., centre to centre. Ballast is gravel, except on a short section on the west end of the road, where sand is used. All ballast is dressed even with top of tie. The broken joint was decided on from a belief, founded on observation and experience, that the sum of the blows received and given by two joints in broken joint track is not equal to that of the same joints when opposite, owing mainly to the fact that the car body does not get a downward motion at each joint of broken joint track of half the amount of the motion at two opposite joints in even joint track.

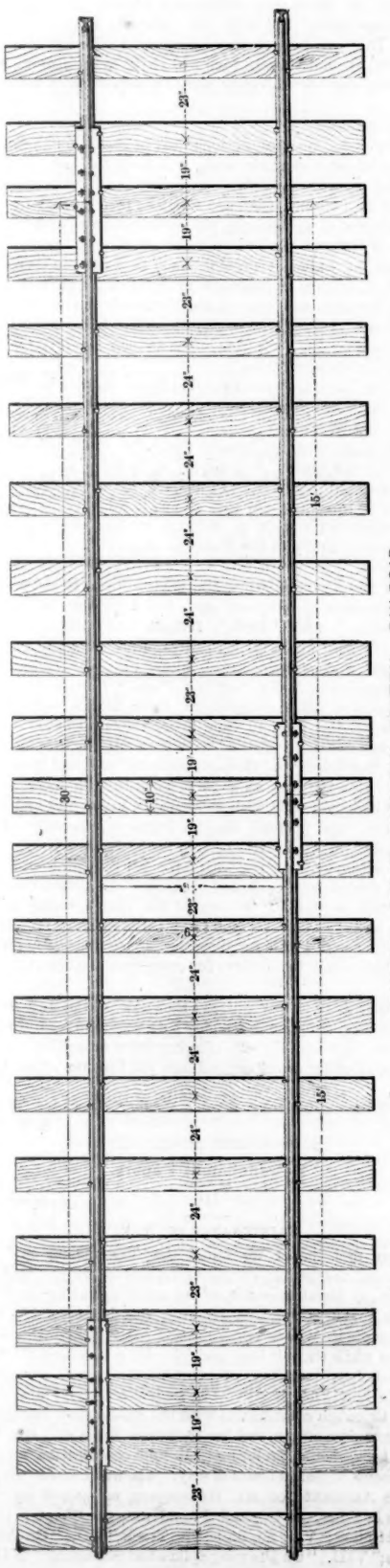
The joint is laid on a tie. There never was a good, practical reason for putting a joint in any other position. The practice of laying suspended joints with angle-bars is responsible for the broken and bent angle-bars so common on most roads, as well as for the excessive wear of splices and rails at the joints.

The blow from the car-body is not delivered at the end of

* An illustration and description of this engine were given in the *Railroad Gazette* Jan. 18, 1884. Further particulars are given on page 202 of our issue of March 27, 1885.



SECTION OF STANDARD JOINT—MICHIGAN CENTRAL RAILROAD.



STANDARD TRACK—MICHIGAN CENTRAL RAILROAD.

the rail, but at some inches from the end. This distance is greater on double-track than on single track. With the joint on a tie we come much nearer having two ties to resist this blow than when joint is suspended, besides having a support for the weakest part of the rail. The joint being on a tie, the centre bolts may safely be placed 6 in. apart, as the tie corrects the tendency the head of the rail has to wedge apart the splices, which produces so much wear in suspended joints. The strain being less, splices do not break and no necessity exists for adding a strengthening rib to the splice or for making the outside splice of increased thickness. It was intended to use steel splices, but the steel-men were not confident of their ability to make steel splices that would be satisfactory in quality and price, and only a portion of this year's supply of splices will be of steel.

Besides the support afforded by the long splice, it gives facilities for spiking the joint to these ties, which entirely prevents creeping of the rails except in very aggravated cases, as in track over marshes where ballast is so thin as to allow the track to be thrown into waves by the weight of trains. Experience has shown that splices 36 in. or 40 in. long are too short, as joint ties are brought too close together to permit them to be properly tamped, and the quarters are left without sufficient tie support.

The Verona nut lock is used and is $\frac{5}{8}$ in. thick instead of the usual $\frac{1}{4}$ in. One end of the Verona nut lock has a tendency to get into the oblong hole in the splice. To correct this by making a round hole in the outside splice is to make the splices rights and lefts. The square iron washer under the nut lock has a round hole and, together with the nut lock, sets the nut far enough away from the splice to allow a square nut to be used.

No claim is made that elasticity of the nut lock plays any part in keeping joints tight. The nut lock is only useful in preventing the nut from working off and the threads on the bolt from being spoiled in case the trackmen do not tighten a loose joint as soon as it becomes loose.

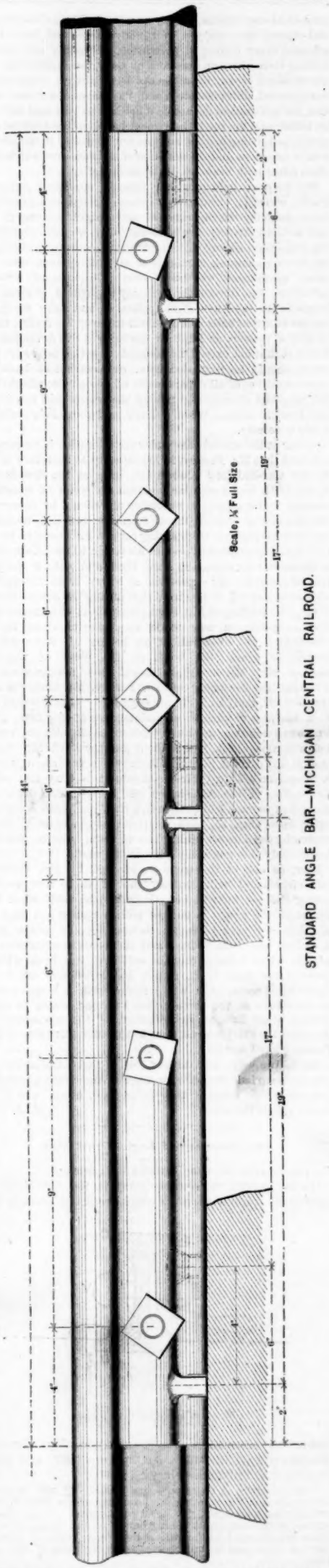
A nut screwed up over one or two battered threads will not stay tight, but will work back to its original position. This makes it necessary to give protection to the threads on the bolt, and especially the one or two next the nut.

No claim is made as to the theoretical value of this joint. Every part of it is what practice has shown to be good in its way. If by its use better track can be maintained for less money than the usual form of joint, it will have done all that is hoped for it.

J. D. HAWKS,
Chief Engineer, Michigan Central Railroad.

[The above letter accompanies the drawings herewith presented and renders further description unnecessary. The first example of very long fish-plates to extend over three ties was, we believe, on the New York, West Shore & Buffalo Railway, which used a 36 in. splice. This has now been increased to 44 in. on the Michigan Central, giving 4 in. more space between joint ties, or 19 in. centre to centre, instead of 15 in. The present Michigan Central splice is therefore easily the longest in this country, if not in the world.

The weight of the angle-bar illustrated is 30 lbs. each, or 60 lbs. per pair, exclusive of bolts. The West Shore 36 in. splice (which is also used on the Chicago, St. Louis & Western Railway) weighs 45 lbs. per pair. The Lake Shore & Michigan Southern is experimenting with a few 48 in. splices, but they are as yet merely an experiment. The Chicago & Alton has recently adopted a 36 in. splice.—EDITOR RAILROAD GAZETTE.]



STANDARD ANGLE BAR—MICHIGAN CENTRAL RAILROAD.

The Master Car-Builders on Rail Sections and Flange Wear.

TO THE EDITOR OF THE RAILROAD GAZETTE:

It is quite safe to say that the article on the question of conformity between rail sections and wheel flanges, signed "C. E.," in your issue of March 27, expresses the views of a large majority of that patient, unrepresented and unassuming class of employés connected with the engineering and maintenance of way departments of the railway service in this country.

While the Master Car-Builders' Association and the Master Mechanics' Society, in their corporate capacities, at their

periodical conventions, and by means of their published official organs, have enjoyed every advantage, and have been afforded every facility of presenting, discussing and disseminating their views on questions at issue, the engineering and maintenance of way departments have always stood alone, unsupported, unrepresented; and the consequence has been that the mechanical department has had its way and dictated its terms, and the road department has simply submitted and conformed, being neither advised nor consulted in the discussion of questions and the adoption of the measures which very often affect both branches of the service alike.

We keep on enlarging our tunnels, spreading our yard tracks, widening our depot entrances, strengthening our viaducts, doubling the capacities of our bridges, increasing our rail sections, tearing down to-day what we have completed but yesterday, simply to conform to the constantly changing but never remaining standards of our rolling stock, until the term "permanent" way has become a misnomer and a farce. Admitting the irresistible tendency towards a gradual increase in the capacities of all appliances, and fully recognizing the fact that railroads are built to carry the traffic, there is still a reasonable limit to the ratio of this development, which should not exceed the demands of actual necessity, and which should be regulated upon an economical basis by representatives of all departments of the service affected by the proposed change, and not by the whims and fancies of one branch alone. What I have said above is intended to apply generally.

As far as the special case under consideration is concerned, it is true that Mr. Forney, in his capacity as Secretary of the Master Car-Builders' Association, did, on the first day of April, 1884, send a circular containing a series of questions relating to this subject to a number of officers in charge of maintenance of way of various railways; but this was only done for the purpose of obtaining certain information to enable him to prepare and present his paper to the Association at its annual convention in June, 1884, and not for the purpose of soliciting any expression of views from the parties addressed; and it is also true that during the discussion following the reading of Mr. Forney's paper at the annual convention, reference was made by some member to the desirability of co-operation on behalf of the men in charge of track, but when at the close of the discussion Mr. E. B. Wall moved the appointment of a committee consisting of Mr. Forney, Mr. Goodwin and three others, and Mr. McIlvain suggested "that it would not be a bad idea to include 'a' maintenance-of-way man, *if we have one among our members*," his suggestion did not receive a sign of recognition, and without another word Mr. Wall's motion was carried, although there was a trackman present in the person of Mr. Caffrey. Again, it is true that after this action of the Association, Mr. Forney once more addressed superintendents, engineers and roadmasters by circular dated Jan. 15, 1885, requesting expressions of views regarding the curves joining the top and sides of the rail heads—only this was asked and nothing more.

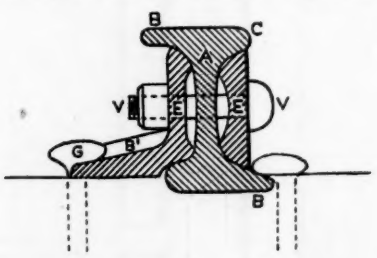
Now, as one of the parties addressed by Mr. Forney's last circular, I will answer, that if it be true that a proper chill of the wheel treads cannot be obtained, if the throat of the flange is curved with a radius less than ⅝ in, then the wheel flanges should not be made with a radius less than ⅝ in.; and if it can be satisfactorily proven (which I doubt) that the soft steel rail head with a curve of less than ⅝ in. radius does injuriously affect the hard chilled metal of a wheel flange with a larger radius of curvature at the throat, then I for one would be quite willing to go into an investigation of the advisability of changing the rail patterns, so as to approach more closely Mr. Forney's ideal section.

But before we go any further, let us find out whether the grindstone grinds the knife, or whether the knife grinds the grindstone, or whether they grind each other, and if so, which grinds the most. M. J. B.

The Invention of Angle Fish-Plates.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Having seen the recent controversy in the *Gazette* in regard to the origin of the angle splice-bar, I beg leave to for-



Newton's Angle Fish-Plate.

ward you herewith a sketch accompanying Newton's (English) patent No. 343, from the year 1860, and quote from his specifications as follows:

"In the figure *A* represents the (patent) **Z** rail recessed into grooves in the cross ties and confined at the joint by the rectangular knee brackets *E* (or a rectangular bracket on the outside of the rail and a fishing bar *E'* on the inside of rail). These are clamped to the rail *A* by screw bolts *V* passing through them and the rail stem, two on each side of the rail joint.

"The brackets are confined to the cross ties by holding-down spikes *G*, driven into slits or notches punched through the edges of the bracket's base. The nuts of the bolts and the bolts themselves are locked and prevented from turning by the nut fastenings *B'*, which are inserted in the angle of the bracket pieces and under the nuts or heads of the bolts. The nut guards themselves are retained under the nuts and are kept in place by the holding-down spike *G*."

I also inclose sketch of English patent No. 2,430, Webster 1857 [which shows an angle-bar on each side of a double-headed rail, connected by bolts through the web of the rail.]

From the above I am led to believe that the angle splice-bar was thought of in England in 1857, or 13 years before the patent referred to in your late issue. Mr. Isaac Dripps, who was Master Mechanic of the Camden & Amboy Railroad, tells me that when the track between Bordentown and Kinkora (two miles south) was raised in 1839 or 1840, cast angle splice-bars were used with satisfactory results.

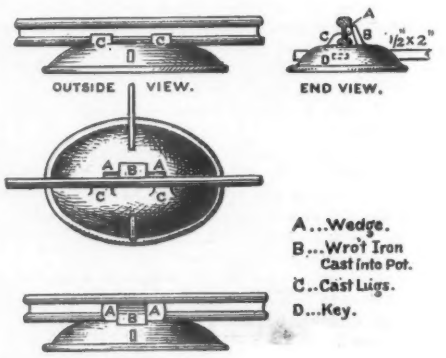
J. E. WATKINS.

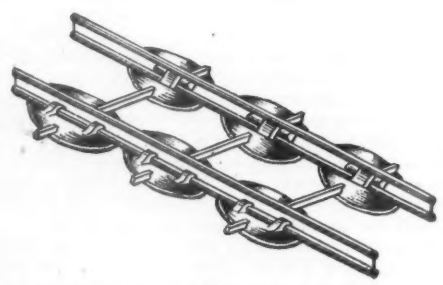
[We omit the engraving of the last patent referred to as it is essentially similar to the German "angle-bar" illustrated in our issue of April 3. The same criticism applies to the forms here mentioned as to the latter; that though in form similar to angle-bars, they are in function mere substitutes in wrought iron for the cast iron chairs used, of necessity, *on every tie* with double-headed rails, and hence of necessity made broad-based, since they furnish the only or chief support to the rail on the tie.—EDITOR RAILROAD GAZETTE.]

Railroading in Buenos Ayres.

Ferrocarril, Buenos Ayres al Pacifico,
KILOMETRE 205, Feb. 15, 1885.

While sitting here in camp all alone, 250 miles west of Buenos Ayres, I am reading the *Railroad Gazette* and wondering if it would be interesting to your readers to know how we lay track down here, and with what material. Far out here on the pampas there is no wood—not enough to build a fire with; we use "cow-chips." I have from memory made a few sketches that will give you an idea of the cross-tie, or "copa" (cup), as it is called. The cups are 26 × 18 in. and 8 in. high, and are placed 1.41 metres (4 ft. 8 in.) apart, centre to centre. They are therefore about 30 in. apart in the clear, so that the perspective sketch represents them much too close together. Tracklaying under good organization can be done a third more rapidly than with wood ties—at least I think so. The fish-bars and bolts are the same as with wooden ties. The rail is 56 lbs. and is 4 in. high and 3 in. base, but it has a bearing of 16 in. on each tie and is clamped at each end of the bearing on the outside and at the middle on the inside. The wrought iron tongue or lug that holds the cast wedge is corrugated on the inside, and the wedge on the outside. The film of metal in the cup is say ⅝ in. average thickness. The tie rods are put in and keyed up on the ground.





Livesey's Patent Pot Sleeper Permanent Way.

Between Buenos Ayres and the foot of the Andes there is hardly a single problem in location. I am now on a tangent 340 kilometers (211 miles) long. I believe that is the longest in the world. There are no bridges, and the heaviest cut is about 1 metre and greatest fill about 2 metres (6.56 ft.). The grades are say 0.5 per cent., or 26 ft., per mile as an outside maximum. Further on there is some work, notably a tunnel 13 kilometres (8.1 miles) long at an altitude of 12,000 to 13,000 ft., but I can give you more information about that later on. I am in charge of the work here for the contractors, who have the entire contract for construction, tracklaying and all. Only 156 kilometres (97 miles) is as yet completed and in operation.

This is a good country for a few engineers, but there is not room for many and a strong prejudice against Americans; or rather, not against Americans but *in favor* of home talent or English. F. L. GRISWOLD.

How Can Through Freight be Made Profitable?

INDIANAPOLIS, April 25, 1885.

TO THE EDITOR OF THE RAILROAD GAZETTE:

On reading in the *Gazette* of April 3, your remarks under the caption "The Profits of Through Trunk-Line Freight," I am inclined to ask the practical question, "What are you going to do about it?" What *can* be done about it? You suggest no remedy. Is there any?

Of course nobody believes that the "condition of things" shown *is* "rational" or "healthful." I think it may reasonably be assumed that the public—the intelligent public at least—are willing that railroads should earn a fair return on a fair cost by fair charges impartially laid. But how is this to be secured?

Unrestricted competition has been tried; it leads the other way.

Pooling arrangements, such as have heretofore been established, between lines with independent managements and adverse interests, merely seems to instigate somewhat and for a time the fierceness of competition. They are never honestly lived up to, and, while human nature is only human nature, never will be. They too have been tried, and we now have the result.

It is clearly impracticable to fix and secure paying rates, and prevent injurious competition (while encouraging the "healthful" kind) by legislative authority.

In other kinds of business, the weaker competitors go to the wall, are sold out by the sheriff, and the law of the survival of the fittest thus sufficiently restricts and regulates free competition. But with our railroads there is no such law. They are here to stay; they must all continue to be run, and, like individuals, each will strive to the utmost, some for profit, some for solvency, some to keep on their legs, anyhow.

What remains?

It seems to me that nothing but consolidation, actual or substantial, on a gigantic scale, will meet the case. Only so can the requisite absolute authority and community of interest be obtained that are required if we would prevent the disregard of agreements, the cutting of rates and the outbreaks of "wars" that destroy the efficacy of "pools," and that are inevitable at present, since they are caused by the pursuit of the (real or supposed) interests of the parties. The several branches and lines of the Northwestern or of the St. Paul do not compete with or injure each other, yet doubtless they would be "at war" as often as their neighbors if they were all independent lines.

If all the lines between the Ohio River and the lakes were under one head—formed one company—adequate and stable rates would be secured.

I will suggest another remedy that some roads might perhaps even now apply. It is simply to abandon the effort to do a "through" business and fall back upon the local. At the present time, and now that all our roads are so deep in the scramble for a share in through traffic, this suggestion will probably apply to few if any of them.

I believe, however, to take an example in the past, that if the Erie management, when Mr. Watson came to the head of its affairs some dozen years ago, had done this, had cut off "extensions" and "lines," freight and passenger, and "through cars" and "through rates" and "commissions" and "rebates" and "drawbacks" and "agents"—"traveling" and "contracting," and "soliciting" and "foreign agencies" and expensive offices everywhere, from Boston—or London perhaps—in the East to San Francisco—or China—in the West—had cut these off, and with them all the innumerable outgoes that belong to "through business," and had been content to run the line as a New York-Buffalo local road, serving its local traffic with local trains, local rates and local appliances, and pushing the development especially of its coal traffic,—it would have been in far better case to-day.

The notion of *not* "reaching" for all you think you can see will doubtless seem absurd to many. I presume few will agree with me, unless it be some of the long-suffering bondholders and stockholders; but I am satisfied that the Erie's share in through traffic for these dozen years has cost, directly and indirectly, two dollars for every one that has been received.

Whether there be any railroad that now could, and might to advantage, adopt such a policy I do not know. I do not fail to see very considerable disadvantages attaching to the adoption of either of my suggestions, yet I see no other way out.

I trust the matter may receive further discussion in the *Gazette*. E. T. C.

Retrenchment Papers.

III.

MAINTENANCE OF WAY.

In our first paper we found the Roadmaster and his department chargeable, excluding repairs to bridges, with 16 per cent., or about one-sixth, of the entire operating expense, and it is not surprising that generally this is one of the first departments in which retrenchment takes practical shape. And yet while there is here undoubtedly a considerable field for a judicious curtailing of expense, the matter should be taken in hand, not hastily, but understandingly, and only after a thorough consultation with the Roadmaster himself.

A managing officer, seeking to reduce force and effect a saving here, should, preliminary to such consultation, master the elements of maintenance of way. The well known "Roadmaster's Assistant" of Mr. Huntington, as revised by Mr. Charles Latimer, can be studied to advantage. Chapters III., "About Spikes;" V., "On Ballasting Track;" VII., "On Track Repairs;" VIII., "On Drawing Spikes and Shimming;" XIII.

"On Fire and Water as Enemies" (especially the remarks on page 115 relative to surface ditches), and XVIII., "On Trackmen's Tools," are the most helpful for the purpose in hand; though whoever reads a small portion of the above chapters will probably read and re-read the entire work, and profit thereby. The work of the late John B. Jervis on "Railway Property," chapters on Grading, Ballasting, and Repairs of Track, will also afford much useful information. Some of the articles by Mr. Charles Paine on "The Elements of Railroading," recently published in this paper, should also be studied, notably the articles on "Drainage," Nov. 7, 1884, page 807, and on "Main Track and Sidings," Nov. 28 and Dec. 5, 1884, in which latter article the question of economizing the time of trackmen is fully considered. Mr. Kirkman's pamphlet on the track accounts of railroads, as well as certain portions of his work on Railway Expenditures, are likewise of value, and I may also mention a series of articles on "Track," written by W. B. Parsons, Esq., recently published in the *Engineering News*.

Having thus obtained a few general ideas, the manager is better fitted for considering the question of how best to reduce expenses in the road department. The most obvious way is either to reduce the force, or to cut down wages, or both. Small reductions of pay can usually be made in times of depression, if made with tact, but economy must be chiefly sought in other ways. When we cut down the working force, we either contemplate getting more work out of each man than before, or else having less done to maintain roadbed and track.

Generally both things are in contemplation. We expect by giving the section-men more to do, to get a little more work out of them perhaps, but at the same time we cannot but admit that the road will suffer some in consequence, and that what work is done will not be done as thoroughly. It will generally be found, however, that where such reductions in force are unavoidable, much more work can be got out of the few men who are left than might at first be thought possible, by paying special attention to their modes of doing work, correcting improper methods, and by finishing them with the most effective tools, which, by saving labor and time, save money. On few roads is the maintenance of way department so systematized as to leave no chance for improvement in these respects. "It is common enough," says Mr. Paine in one of the articles just referred to, "to find a severe economy as to the number of men employed, upon roads where very little attention is given to economizing their time by providing them, for instance, with hand cars which run easily, and with cold chisels which will stand to cut a rail, or draw-bars which will pull a spike. * * * A little reflection or brief calculation should convince any railroad officer that such neglect involves waste." In this same strain, on page 157 of the "Roadmaster's Assistant," we find the following: "Good tools are of vast importance, and much money can be saved to a railroad company by watching with jealous care every improvement, and adopting that which has been proven."

In reducing force it should not be forgotten that the number of men per section may be cut down so much as to render it impossible for the few who are left to work to proper advantage. Managers often go too far in this direction, and much should be left to the judgment of the Roadmaster. It will usually be found advisable, especially where economy is to be carefully studied, to have full section gangs at certain seasons of the year, and confine all reductions of force to other seasons, but the best time in which to effect such reduction will depend on many things. The peculiarities of the climate, the nature of the region traversed by the road, the kind and quality of ballast used, the manner in which the road is constructed, and even the habits of the working class from which the sections are reinforced, will all have their influence. Thus on northern roads, when frost is well out of the ground, a large force can be well employed in putting in new ties, surfacing, and lining up; and this work can be done much more economically with full than with depleted section gangs. But when the track is once in shape, economy can be put in practice, and the force reduced, with a slight increase say in the fall, to enable the road to be properly ditched for winter. Of course, with poor ballast, the heaving action of frost upon surface and alignment necessitates continual shimming up of the track, and a destructive adzing out of ties throughout the winter, and greatly increases the labor of surfacing and lining it up when spring arrives, which means an increased pay-roll, and a decrease in the life of the tie. Any improvement in the quality or quantity of the ballast, however, by mitigating these evils, tends toward retrenchment; and where stone ballast of proper depth is used, no shimming whatever is required, and with the attention of a minimum force during the winter, the roadbed is almost as good in spring, after the frost is out of the ground, as it was before frost came.

Again, in some parts of the country, especially the West, much higher wages must be paid at certain seasons of the year (usually the summer months), owing to the high wages prevailing in harvest time, and here economy would prompt the roads as far as possible to increase their sections to the maximum when wages are at the minimum, which leads directly to the Western practice of large sections putting the road in shape in spring, subsequently reduced to even as low as two men in the summer and winter, for by occasionally doubling sections up roads of light traffic have been and can be operated, during the summer months, with as small an allowance of trackmen as this, provided they commence the season with everything put into good shape by a larger force.

All of which I write to enforce the idea that any cutting down of the force in the road department should be done judiciously *and at the right time, i. e.*, the time when the Roadmaster says he can best stand the reduction. Have a good Roadmaster on whose judgment you can implicitly rely, and leave the settlement of the question entirely to him. Let your instructions to him be general, and let him arrange the details in carrying them out.

Having thus disposed of the question of when and how to reduce the force, and with things running smoothly on a basis of "the most rigid economy," it will be found that the ability on the part of the Roadmaster to know just what work the company can best afford to slight somewhat, and to what extent, in order to obtain more time for that work which must not be slighted, is of great importance; a pre-requisite, if any good results are to be obtained from a reduced force of track repairers. That is to say, given the thousand and one things necessary to be done in order to maintain a decent and respectable track, and also given men and material only sufficient to do properly six or seven hundred of them: and required the ability on the part of the Roadmaster so to order the affairs committed to his charge that those things shall be well done which most ought to be done and that only those things shall be left undone or partly done the omission or neglect of which will least interfere with the company's best interests, physical and financial. This is indeed an important problem in the road department, for which the only happy solution, as before, is a Roadmaster whose good judgment and knowledge of his profession, or, in short, whose fitness for his place, is beyond question.

A company favored with officers of this stamp can weather any gale in which it is possible to live.

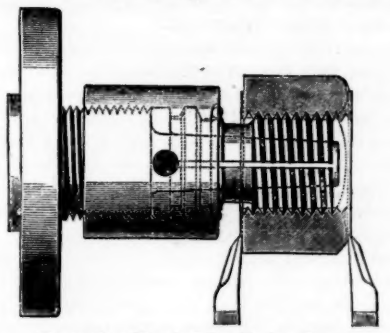
The remainder of what I wish to say concerning the road department I find I must defer to the succeeding paper.

EDWIN A. HILL.

Expanding Mandrel for Facing Nuts.

We are indebted to *Engineering* for the annexed description of a device for facing nuts:

To face nuts with accuracy it is necessary that they should be held firmly by a screwed mandrel which fits tightly into the threads. But it is tedious work, forcing nuts on and off a screw that fits them so tightly that it will hold them against the pressure of the tool; and to avoid this, the expanding mandrel shown in the annexed engraving has been designed. The mandrel is hollow, and is cut, after it is otherwise complete, into three parts. The central hole is taper, and fits upon a conical core fastened to the nose of the lathe mandrel. The three parts are held in place by a sleeve, which at one end has recesses to fit collars on the mandrel, and at the other end a screw thread by which it can be made to travel along the core, carrying with it the split mandrel. In use the nut to be faced is screwed upon the mandrel by hand, and then the sleeve receives half a turn. This draws the three parts of the mandrel up the incline and expands them into the nut so that the latter is rigidly fixed. Two ends of the nut are then faced simultaneously, and the half-threads at each end are taken out by a hand tool to prevent them burring up. A half-turn of the sleeve releases the nut, which is removed to make way for the next.



Expanding Mandrel for Facing Nuts.

The same core and sleeve can be provided with several sizes of split mandrels, both screwed and plain, and suitable for many classes of work. The mandrel is made by Messrs. H. B. Barlow, Jr., & Co., Chester-road, Manchester, England.

ANNUAL REPORTS.

The following is an index to the annual reports which have been reviewed in previous numbers of the current volume of the *Railroad Gazette*:

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Grand Trunk.

The report of this company for the half-year ending Dec. 31 last covers all the lines of the company, 2,919 miles. Comparisons are made with the second quarter of 1883, when 2,819 miles were operated

The mileage run by trains was 7,660,275, an increase of 2.2 per cent. There were 2,883,694 passengers, a decrease of 4.1 per cent. Through freight decreased, but local freight increased, the total tonnage moved showing an increase of 97,188 tons. The average rate for the half-year was 0.75 cent per ton-mile in 1884, against 0.85 cent in 1883.

The earnings and income for the half-year were as follows:

	1884.	1883.	Decrease.	P.c.
Earnings	£1,821,747	£2,054,248	£232,501	11 3
Expenses	1,321,783	1,396,496	64,713	4.6
Net earnings	£489,964	£657,752	£167,788	25.5
Interest, etc.	47,233	100,851	53,618	53.1
Total	£537,197	£758,603	£221,406	29.2
Interest and rentals	411,807			
Balance	£125,390			

The working expenses were 73.1 per cent. of gross earnings in 1884, against 68.0 per cent. in 1883.

The report says: "This amount of £125,390, added to the balance from last half-year (£592) makes a total of £125,982, which provides for the payment of the full half year's dividend on the 4 per cent. guaranteed stock, amounting to £104,396, and for the payment of a dividend on the first preference stock at the rate of 1¼ per cent. per annum, amounting to £20,094, leaving a balance of £1,492 to be carried forward to the next half year's accounts. The balance of the cost of a new ferry steamer £6,170, and, in accordance with the provisions of the Deed of Union, the Great Western deficiency at June 30, 1884, amounting to £70,138, have been debited to the reserve fund, leaving £7,613 at the credit of that fund on Dec. 31, 1884."

The loss in earnings was due to a diminished passenger traffic in part, but chiefly to the extremely low rates at which the road was compelled to carry freight, resulting from the low prices of grain and the very sharp competition of other lines. The report refers to these causes at considerable length.

The earnings for the entire years 1884 and 1883 compare as follows:

	1884.	1883.	Inc. or Dec.	P.c.
Freight	£2,147,068	£2,412,470	D. £265,402	11.0
Passengers and mails	1,208,374	1,456,439	D. 188,065	13.0
Rents, etc.	14,774	19,527	D. 4,753	24.4
Total	£3,430,216	£3,888,436	D. £458,220	11.8
Expenses	2,506,679	2,718,714	D. 215,035	7.8
Net earnings	£923,537	£1,169,722	D. £246,185	21.0
Gross earn. per mile	1,175	1,379	D. 204	14.6
Net " " "	316	415	D. 99	23.8
Per cent. of exps.	73.1	69.9	I. 3.2	....

The report says: "The directors have thought it right, in reviewing the results of the year 1884, which have been of so exceptionally unfavorable a character, to deal at length with the various matters above referred to, in order to afford to the proprietors all possible information as to the causes which have affected the working of this great undertaking. The directors extremely regret that in consequence, as has been fully explained, of commercial depression, of ruinous competition and of low prices in Europe and America, the revenue of the company has so seriously fallen off in 1884. The directors and the proprietors must alike feel this disappointment the more keenly after the sanguine hopes naturally induced by the very favorable results obtained after the building up of the system, and the fusion of the Grand Trunk and Great Western companies, from August, 1882, until the end of 1883. The directors can only assure the proprietors that everything has been done that could be done to counteract the long series of unfortunate conditions, entirely beyond their control, to which the railway has been subjected; and they can only hope that the worst has now passed, and that the Grand Trunk system, which is better prepared than ever to take advantage of a general improvement, may ere long return to greater prosperity, which is quite as possible in the future as it was in 1883."

Marquette, Houghton & Ontonagon.

This company's line extends from Marquette, Mich., to Houghton, 95 miles, with 40 miles of branches to mines. The following statements have been published for the year ending Dec. 31:

The earnings for the year were:

	1884.	1883.	Inc. or Dec.	P. c.
Earnings	$819,198	$902,159	D. $82,961	9 2
Expenses	488,907	509,824	D. 20.917	4.1
Net earnings	$330,291	$392,335	D. $62,044	15.8
Gross earn. per mile	6,068	8,648	D. 2,580	29.8
Net " "	2,447	3,857	D. 1,410	36.6
Per cent. of exps	59.7	56 5	I. 3.2	....

Expenses include taxes paid. Of the main line 32 miles, from L'Anse to Houghton, were completed in November, 1883. The decrease in earnings was due to depression in the iron trade and loss of business by competition.

The result of the year was:

Net earnings as above	$330,291
Interest charges	213,302
Surplus for the year	$116,989

This surplus was equivalent to 5¼ per cent. on the preferred stock; the dividends actually paid were 2½ per cent. In 1883 the dividends paid were 8 per cent. on the preferred stock, and there remained a balance of $33,169, equivalent to 1¼ per cent. on the common stock.

The Meigs Elevated Railroad.

Capt. Joe Meigs has begun operations on his elevated railroad in earnest. The requisite amount of money has been subscribed, and work has actually been started toward building the experimental section of road required by the terms of the charter granted by the Legislature. One-half mile of road is to be built, which will start from a point within a short distance of the East Cambridge station of the Boston & Lowell. It will start in the yard of the old Bay State Glass Co.'s works, now the property of Mr. John P. Squire, and running north and west of that point or several rods on the east side of Bridge street, parallel to and between that street and the Boston & Lowell tracks, it will make a sharp turn to the left and cross Bridge street at almost a right angle. Thence it will turn sharply to the right and run parallel to Bridge street for some distance, through several vacant lots belonging to Mr. John P. Squire, till it reaches the requisite point, when a semi-circular curve will be made, and a return made to the starting point, to which it will also be joined by an abrupt curve in the yard of the glass works. The glass works have been leased for the purpose, and a locomotive, tender and one or two passenger cars will be built therein. The machinery required for all the work has been placed in the buildings. Captain Meigs' offices have been placed therein, and in a few more days a large gang of workmen will be in full operation getting out the iron columns, the superstructure, rails and other material pertaining to the process of construction. It will be borne in mind that the section of road thus to be built, together with the locomotive and cars, are to be of the full size in this practical working model. Capt. Meigs expects to run his first trains on or about the middle of September next.—*Boston Traveler.*

RAILROAD GAZETTE

Published Every Friday.

EDITORIAL ANNOUNCEMENTS.

Passes.—*All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.*

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.*

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

COST OF FREIGHT TRANSPORTATION IN ENGLAND AND THE UNITED STATES.

Surprise is often expressed that the average expense of transport per railroad ton-mile should be so much lower here than in Europe, though the consumption of fuel is higher with us.

The explanation appears to be founded on at least two distinct reasons. Granting that there is a wasteful consumption of fuel on American railroads, it does not follow that any very unnecessary expenditure exists in other directions. Because a man indulges in the most expensive cigars, it does not follow that he also speculates in Wall street. And probably any waste in the matter of fuel is more than made up by economies in other directions. Freight in Europe is handled and transported in smaller quantities than here, a larger percentage consists of manufactured or perishable articles, while the long hauls common here are practically unknown there. All these factors tend o increase the staff necessary to handle freight.

A comparison between the work done by an American and an English railroad in performing an equal number of ton-miles will make this clear. Taking a typical haul in each country, Chicago to New York in one case, and Manchester to London in the other, the American road has in round figures earned freight on 10,000 ton-miles when it has hauled an average carload from Chicago to New York. The average actual load of an English wagon is under three tons, and, therefore, to convey 10 tons three wagons must be loaded against one American car. The distance being under 200 miles the 10,000 ton-miles can only be achieved by at least 15 individual trips on the part of an English wagon. The expense of switching, loading and unloading varies, however, more with the weight than with the number of vehicles used. But as the load has to be handled five times as often, it is evident that the terminal station expenses will (wages and other similar conditions being assumed to be equal) be five times greater in England than here. This difference is too great to be altogether neutralized by lower wages and a smaller consumption of fuel in haulage.

Leaving the question of the *cost* of transportation, as represented by the working expenses, surprise is often expressed at the much higher *price* in England, per ton per mile, that of course including the interest earned on the capital invested. Neither the average cost nor price per ton-mile, be it remembered, is ascertainable from the reports of English railroads, because these do not give the ton-miles; but it is known that the specific rates charged for given distances are often much higher than in this country east of the Mississippi.

In a country as small as Great Britain, with an isolated railroad system, nearly the whole traffic consists of what would here be called short hauls, and the proportion of terminal expenses is necessarily so much greater that, other things being equal, the average cost and price should be materially greater; but these averages, as we have said, cannot be compared, because no one knows what they are in England. We can only compare specific rates for specific distances.

One great reason for the lower price of transport here is that our railroads have been cheaply constructed, and have received, as compared with railroads in older countries, full liberty to construct their lines in the manner that seemed most desirable to those building the roads.

This policy has given us many railroads that we would not have had otherwise, but has involved much inconvenience to individuals and municipalities, and more numerous accidents. The money value of these inconveniences does not appear in American railroad accounts, but in Europe the precautions which are enforced by stringent legislation have to be paid for by the railroads, and they in their turn recoup themselves by charging higher rates of freight.

For instance, in most European countries a gatekeeper must be stationed at every public highway crossing, and a signalman at every point where two railroads cross one another on a level. In England the latter crossing is not permitted under any circumstances, and a highway crossing at grade is only permissible in special cases. This protects the public from loss of time and danger, but of course involves considerable expense to the railroads. If highway crossings are tolerated, the working expenses are increased; if a bank or a cut and a bridge are made, the capital account is increased.

Another great cause of increased capital is found in the fact that lines are not allowed to enter towns or run along streets on a level. The New York Central Railroad considered that the city of New York should pay a large share of the expense of the covered way and cut by which its line runs into the Grand Central Station. But in Europe not only would such an approach have to be constructed wholly at the company's expense, as a matter of course, but public opinion would imperatively demand, and what is more, obtain, the further construction of the line in the heart of the city, say Union Square. Taking the City Hall as the centre of the business part of the city, or, what is the same thing, the centre of the area in which property, as measured by the cost per square foot, is most valuable, the passenger stations in nearly all European cities are considerably nearer the centre of the city than the distance (two miles) between Union Square and the City Hall.

Enormous sums of money have been spent in Europe in buying property to build freight stations in the trade centres of cities close to the warehouses and wholesale stores. In Liverpool (600,000 inhabitants), the General Manager of the London & Northwestern Railway stated in 1881, in evidence, that his company had expended $9,300,000 in providing freight stations alone. In London it had expended $11,200,000. Interest at the rate of 4 per cent. on the cost of these stations, less rents received for warehouses, etc., amounted at Liverpool to 14.6 cents, and at London to 32 cents per ton of freight handled. Thus the mere payment of interest on the terminal facilities, excluding any charge for handling the freight, would, on a haul from Liverpool to London, amount to 46.6 cents per ton, or nearly ¼ cent per ton-mile. These figures do not include the cost of collecting, distributing, and sorting sidings, of which there are 38 miles at Edgehill (Liverpool), and proportionate lengths at other places.

The total actual average cost of loading and unloading freight per gross ton, exclusive of interest, was given as under for the year 1880, at the following places:

	Cents.
London	70.1
Manchester	41.0
Birmingham	34.0
Liverpool	39.4

This total cost was defined by Mr. George Findlay as follows:

"The total cost includes loading and unloading, and the wages and fuel and stores in connection with working the hydraulic hoists and cranes, and the wages of clerks, gatemen, watchmen, and others; including, in fact, everything incidental to carrying on the business of the station. It does not include any charge for risk, breakage and pilferage, and of course excludes cartage."

It therefore appears that the cost of loading and unloading, and the interest on the cost of the terminal stations, may on a journey of 193 miles amount to no less than 156 cents per gross ton, or about 0.82 cent per ton-mile.

This enormous expenditure in building freight stations in the heart of a busy city, where land is very costly, cannot be regarded as a waste of money, though at first sight it may appear so. A railroad, like any other person who desires to do a large business, must court the convenience of his customers. The saving in cartage and the greater convenience make it worth while for the railroad to bring its freight station to the customers' doors.

It is therefore evident that the difference in cost of transport is caused by far more potent factors than the cost of coal. Any consideration of the relative consumption of coal per unit of work done must be deferred to a future occasion.

LIVE STOCK AND TRAFFIC.

The Department of Agriculture reports the numbers of live stock of different kinds in each state Jan. 1 last, showing in the aggregate compared with last year an increase about equal on the average to the increase in population. For the last four years in January and also in the census year in June the numbers have been reported as follows:

	1880.	1882.	1883.	1884.	1885.
Horses	10,357,488	10,557,553	10,838,111	11,169,683	11,564,572
Mules	1,812,808	1,830,553	1,871,079	1,914,120	1,972,569
Milch cows	12,443,120	12,637,911	13,125,685	13,501,206	13,914,722
Other cattle	23,482,391	27,102,207	28,046,077	29,046,101	29,866,573
Sheep	42,192,071	46,617,830	49,237,291	50,626,626	50,360,243
Hogs	47,681,700	44,528,082	43,270,088	44,200,893	45,142,657

The census of ranch cattle and sheep was very incomplete, and the total number of cattle given by the census was doubtless much below the actual number. Otherwise the numbers for 1880 are doubtless more accurate than those for subsequent years. The increase in the population of the country since the census has been about 14 per cent., against which there have been the following percentages of increase and decrease in live stock:

Horses.	Mules.	Cows.	Hogs.
Increase, 11.7	Increase, 8.8	Increase, 11.7	Decrease, 5.4

It is not safe to take the census figures for the sheep and cattle other than milch cows; but since 1882 there has been an increase of 10.2 per cent. in cattle and 8 per cent. in sheep, while the increase in population has been about 8½ per cent.

In nothing, except possibly cattle, does the increase in live stock since the Census appear to be equal to the increase in population, but as we produced a very large surplus then, that should not prevent our having a considerable exportable surplus now. The stock of hogs is much less this year than in 1880, however, and it is these which afford the larger part of our exports of live stock products. Since 1882, however, the number of milch cows has increased 10 per cent. and the number of horses 9½ per cent., which is considerably more than the increase in population. The railroad mileage having increased enormously since the Census year (about 42 per cent., and since 1882 21 per cent.) of course the number of animals and the quantities of their product per mile of railroad is very much less now than then. Hogs probably supply more food than cattle, notwithstanding their much lighter weight, as it takes twice as long for the cattle to grow, and a very much larger proportion of the whole stock of hogs than of the stock of cattle is slaughtered every year. Thus the increase in cattle since 1880 may not much more than balance the decrease in hogs, so far as supplying food is concerned, and leave much less meat per inhabitant now than then, which is doubtless the case, exports having fallen off greatly, and home consumption probably averaging less per inhabitant, as there are now many out of work and forced to reduce their living expenses. And there is evidently now much more room for an increase in meat production than in breadstuffs production. But neither grain area nor live stock has kept pace with population since 1880, not to say with railroads.

The course of prices also indicates that relatively live stock has not kept pace with grain-growing. Prices of meats and animals are much higher in proportion than prices of cattle.

A rapid increase in animals is possible only with hogs and sheep. The present tendency with the latter is to decrease, but the abundant crop of corn and the relatively higher price of hogs than of corn will tend to cause a rapid increase in the stock of hogs, which may by next winter be as large as ever before, or nearly so.

It is remarkable that in spite of years of high prices the stock of beef cattle has increased so moderately, last year but 2½ per cent. Our exports of beef are but a very small proportion of the entire production, yet in spite of the stocking of ranches over a vast territory which but recently was entirely unused, the pro-

duction seems to have hardly kept up the home supply. Possibly the transfer of cattle-growing from the agricultural to the purely grazing country has resulted in a smaller natural increase, as a larger proportion of the calves—in some winters a large proportion—are unable to stand the exposure on a ranch, while among farmers they would be protected. Again, the development of the dairy business tends to reduce the increase, as a considerable proportion of the calves of cows kept for their milk are not raised.

Ten years ago, when cattle growing on the great plains began to be developed, and there was then what appeared to be an unlimited range for them free to every comer, it seemed that if the plains were fairly stocked the whole world could be supplied from them. Now that it is difficult to find a good range unoccupied, beef is as dear as ever, we export but little, and the increase in the supply barely meets the demand in a period of industrial depression, when consumption is below the average. There has been, however, a great increase in the whole number of ranch cattle. Including all Kansas, Nebraska and Texas, in which there are many cattle on farms, but excluding Dakota, which has now a considerable number of ranch cattle, the number reported by the Department of Agriculture in the ranch country, have been, Jan. 1, for four years:

1882.	1883.	1884.	1885.
10,810,817	11,693,300	12,727,888	13,319,663

This makes the increase from

1882 to 1883	882,783 head =	8.2 per cent.
1883 to 1884	1,034,588 " =	8.9 "
1884 to 1885	590,775 " =	4.6 "
1882 to 1885	2,508,846 " =	23.2 "

Now the increase in cattle, aside from milch cows, in the whole United States since 1882 has been but 2,764,363 head, or but 255,520 more than the increase in ranch cattle. Thus, if the Department's statistics are correct, there has been very little (1.6 per cent.) increase of stock and fat cattle since 1882 east of Texas, Kansas, Nebraska and Montana. The increase there has been wholly in milch cows. The ranch territory had 44½ per cent. of all the cattle of the country this year, against 40 per cent. in 1882.

Coupled as this lack of increase of cattle in the East has been with a decrease in the stock of hogs and the very small increase in the crop of grain (for east of these states the area of 103,700,000 acres of grain in 1881 rose only to 111,255,000 acres in 1884—a gain of 7½ per cent. in three years, while the increase further west was nearly 28 per cent.), there seems to have been of late years a wonderful stagnation of farm industries in the older part of the country, which includes more than four-fifths of its cultivated area. As among these states are included not only the older ones, but some with a great area of unoccupied land which certainly have been growing rapidly, as Iowa, Minnesota and Dakota, the stagnation in the other states is certainly remarkable.

The number of cattle in what we have called the ranch territory have not increased everywhere alike by any means. In a large part of this territory grazing is the chief industry, and the railroads of the plains country must get their chief support from it.

In each state and territory the numbers reported in 1882 and 1885 were :

	1885.	1882.	Increase.	P. c.
Nebraska	1,505,350	983,471	521,879	53.0
Kansas	1,423,104	1,163,545	259,559	22.5
Indian T	570,000	500,000	70,000	14.0
Texas	4,234,923	4,240,000	Dec. 5,077	0.1
New Mexico	959,881	312,500	647,381	207.0
Colorado	849,816	615,920	233,896	38.0
Wyoming	914,940	614,000	300,940	49.0
Montana	615,000	568,118	46,882	8.3
Idaho	223,178	205,263	17,915	8.7
Utah	145,398	101,000	44,398	44.0
Arizona	217,210	123,000	94,210	76.6
Nevada	240,196	208,000	32,196	15.5
California	615,595	551,000	64,595	11.7
Oregon	551,658	510,000	41,658	8.2
Washington	253,414	115,000	138,414	120.3
Total	13,319,663	10,810,897	2,508,846	23.2

Some of these changes are remarkable. The increase of more than 200 per cent. in New Mexico is hard to believe, and if true must have been due to great importations, which it was possible to make from Mexico as well as Texas. The increase is very large in Nebraska, Wyoming, Colorado, Utah, Arizona and Washington; but it is surprising to see so small an increase in Montana, which is the newest large ranch country, and which has imported large numbers of young cattle from the East of late years. The increase is also small in Idaho, Oregon, California and Nevada, and it appears that out of an increase of 2,500,000 head of cattle in the whole ranch country, and of 2,764,000 in the whole United States since 1882, no less than 2,057,000 has been in Nebraska, Kansas, Wyoming, Colorado, New Mexico and Arizona, and in these and Dakota the increase has been 2,322,564, or five-sixths of the total increase in the United States.

In the states and territories on the Northern Pacific Railroad west of Minnesota there are 2,062,680 cattle; in those on the Union Pacific, 5,071,736; in those on the Southern (west of Texas) and Central Pacific, 2,278,280; on the Atchison, Topeka & Santa Fe, 2,858,222; on the Chicago, Burlington & Quincy (west of the Missouri), 2,355,166.

The increase in ranch cattle from 1884 to 1885 we see was quite small (4.6 per cent.), compared to the increase for two years previous. Only in New Mexico and Dakota is it reported large—39 per cent. in New Mexico and 55 per cent. in Dakota. A decrease is reported in Texas and Montana, and very small increases in Kansas, Wyoming, California and Oregon. The winter of 1883–84 was not particularly unfavorable, and the slower growth last year may indicate that the territories named have been getting pretty well stocked, and that there will not be hereafter the great increase there has been for some years past.

This industry does not, like farming, require that transportation should be close at hand. Cattle will be driven hundreds of miles to market, if there is grass on the route, and there are now few parts of the country so distant from a railroad that cattle-raising may not be followed there profitably, provided the grazing is good. There will, doubtless, be a great increase in the number of the cattle on ranches hereafter, but it is not likely to come as fast as heretofore.

THE RAILROADS OF CANADA.*

Canada is the country of light railroad earnings. The average earnings per mile of the 9,575 miles in operation for the year to June 30, 1884, as reported by the Chief Engineer and General Manager of the Government Railways, were $3,491 per mile, against $7,461 for the railroads of the United States in the last year reported. The Canada Southern led, with $10 600 per mile. Parts of the Grand Trunk may have exceeded this, but the whole system is given together, earning an average of $6,290 per mile. These two companies together, having 31 per cent. of the whole Canadian railroad mileage, had 60 per cent. of the total earnings, and the other 36 companies, with 6,625 miles of road, earned but $13,313,184, or an average of $2,010 per mile, on which railroads would starve to death almost anywhere else in the world. It might be thought, perhaps, that the average is brought down by the large mileage of the new and undeveloped Canadian Pacific, but its earnings are *above* the average of the 36 roads, not below. Among them all only two earned more than $3,500 per mile, and these together have but 57½ miles of road. At the other extreme are earnings per mile *for the year* of $39, $230, $264, $283, $436, $486 and $510!

With these attenuated receipts, it is not surprising to find that no less than 12 of the 38 Canadian railroads did not earn their working expenses. In the aggregate the 9,575 miles of road earned $7,826,363 net, or $817 per mile—6 per cent. on a capital of $13,617 per mile, while the average capital of the Canadian railroads is $58,230 per mile. The net earnings per mile of the railroads of the United States were $2,702 per mile.

When we are asked what can have induced capitalists to put their money into such profitless enterprises, we reply that they did not. There are truly a great many buried hopes among the Canadian railroads, but not so many as would appear from the above; for of the $557,615,069 of total capital, $144,844,088 was contributed by the Dominion and Colonial governments and by municipalities, and several lines are worked by the government. Nearly every company in the Dominion is reported to have received government aid of some kind, but the larger part has gone to the Canadian Pacific and its dependencies ($85,463,478), the Intercolonial ($42,582,232) and the numerous lines in the Grand Trunk ($16,814,559). The latter company, with 26 per cent. of the mileage, has 45 per cent. of the total capital of the Dominion railroad system, there being $65,000,000 of "ordinary" shares which are a great way from any dividend in the best of times, and more than $15,000,000 of a government loan, which has been made subordinate to the ordinary shares even, we believe. If we take out the Grand Trunk, the other Canadian roads have a light capital, 7,358 miles having $204,558,891, or less than $28,000 per mile. Naturally, with so light an income, the part of the capital represented by bonds is small—only $11,000 a mile and not one-fifth of the whole. And more than half of these bonds are on the Grand Trunk system, while the funded debt of the other 7,358 miles of road is only $49,029,329, or $6,664 per mile. This is largely due to the government advances and government railroads, but most of the Canadian railroads have light mortgage debts, otherwise they could not be kept out of receivers' hands. Several have no bonds outstanding.

The Intercolonial Railway, which was built and is worked by the Dominion government and cost $42,582,000, earned net last year the sum of $4,956, or $5.70 per mile. Its gross earnings are considerably above the average of Dominion roads—$2,780 per mile. It was not built for profit primarily. The Prince Edward Island Railway, another government line, 198¼ miles of 3½ ft. gauge, built some 12 years ago, earned $728 gross per mile, and netted a loss of $91,924, or $46 per mile.

The Canadian railroad system is in proportion to population larger than ours, but, of course, not nearly so large in proportion to area. The number of inhabitants per mile of railroad last July was about 400, against 458 in this country. The growth of the railroad system there has been of late years about as rapid as here. From June 30, 1880, to 1884, the increase in road in operation was from 6,891 to 9,575 miles, or 39 per cent. in Canada; from January, 1880, to January, 1884, the increase was about 40 per cent. here. From 1876 to 1884 the increase was from 5,157 to 9,575 miles in Canada, or 86 per cent. Here the increase from 1876 to 1884 was only 60 per cent., but it amounted to 44,800 miles, and in 1881 we built about as much railroad as the total Canadian system last June, and in 1882, 2,000 miles more. The rate of growth has not fallen off as much in Canada as in this country since 1882, the addition in 1883-84 being nearly 10 per cent. The mileage opened for traffic in Canada in each of the last eight years (ending with June) has been :

Year.	Miles.	Year.	Miles.
1877	417	1881	369
1878	569	1882	270
1879	341	1883	1,196
1880	407	1884	849

The railroad mileage of the single state of Illinois is nearly as large as that of the whole Dominion of Canada, but the population of Illinois is probably but a seventh or a sixth the smaller. The Illinois railroads earn more than twice as much as the Canadian roads, however. Indeed, the Massachusetts railroads, with only 30 per cent. of the Canadian mileage, had one-fourth more earnings.

The figures are :

	Canada.	Massachusetts.
Miles	9,575	2,852
Gross earnings	$33,422,204	$41,456,977
Per mile	3,490	14,535
Net earnings	7,826,363	10,52 .735
Per mile	817	3,692

Massachusetts has about 950 inhabitants per mile of railroad, against 400 in Canada. The gross earnings of the Canadian roads were just about equal to those of the 1,000 miles of the New York Central in 1880 and 1883, but their net earnings were nearly a fourth less than the Central's last year, and only about half as great as the Central's in 1880.

In view of the lightness of the traffic that it can afford them, Canada has been remarkably successful in providing itself with railroads. The lightness of the traffic is doubtless chiefly due to natural conditions. The older part of the country has not such a population nor industrial development as our East, and long extents of uniformly fertile country, such as there is in our own Western States, are not found there. The great forests have made an enormous amount of freight, but most of it was not moved by rail. To the north and west there was until lately an unbroken wilderness, and so there was little through traffic. In the great prairie country west of Winnipeg there is now opening an agricultural country which may possibly some time afford a traffic like what the roads west of Chicago get. There is much more waste land in the Canadian Northwest than in Illinois, Iowa and Eastern Kansas and Nebraska, but if too many railroads are not built, there may be a heavy agricultural traffic for a considerable system there, and from the settlement and development of this new country the older Canada hopes to profit as our Eastern States have profited by the growth of our West. But so far as railroad traffic is concerned, the figures above show that a very great growth is necessary before it can be for most Canadian lines what would be thought a moderate business on this side of the border. Moreover, the Canadian railroad system has grown so much faster than the population that even a considerable increase of traffic would have left a considerably lighter traffic per mile of road. Except west of Winnipeg a very rapid growth of population, such as there often has been in our newer states, cannot be expected in Canada. It is an old country, and new railroads east of Lake Superior either penetrate districts already well supplied with transportation, or extended through forests where the work of bringing the soil under cultivation is necessarily very slow.

* "Railway Statistics of Canada," for the year ending June 30, 1884, reported to the Department of Railways and Canals, by Collingwood Schreiber, Chief Engineer and General Manager of Government Railways.

THE WEARING QUALITIES OF STEEL.

An article of no little interest on "The Wearing Qualities of American and English Steel Rails" appears in a recent issue of the *Age of Steel*, brought out by a rather indefinite and random charge of the *Ironmonger*, which latter journal, at the end of an article complaining of the great deterioration in England and elsewhere of the quality of steel rails, asserted that the same condition was "amply proved" to exist in the United States by the fact that an American engineer who was in England to see about buying rails "found that the life of American rails did not average more than seven years, whereas English rails last from 14 to 20 years." The *Age of Steel* has collected evidence on the subject from some twenty different lines, some of which give facts and others merely opinions, containing in the aggregate many points of interest.

The interest, however, is in many ways more apparent than real, so that we do not attempt any general summary of conclusions. The point of most interest is, that by comparison of the responses from the Lehigh Valley, the Pennsylvania, the Wabash, St. Louis & Pacific, the Ohio & Mississippi, the Cincinnati Southern, the Michigan Central, and other lines, the estimates of the probable life of rails of good quality, of weights such as they have in use, varies within the narrow limits of from 15 to 18 or possibly 20 years. Such a coincidence in roads having such wide differences of traffic would be meaningless and absurd, except for the difference in the weight of rails used. Those of heavier traffic use a 67 to 70 lbs. rail, those of intermediate traffic 56 to 60 lbs., while the road whose rails carried probably the lightest traffic, the Cincinnati Southern, uses only a 53 lbs. rail, over which, however, consolidation engines of the heaviest type have been running for the last three of the nine years during which the rails have been in service, while the rails are "still in good condition," showing that so light a rail must have been originally of excellent quality. The fact that they will not last at least four times as long as rails on the Pennsylvania road, as required by relative tonnage, is properly to be ascribed, not to any fault or defect in the steel, but to the use of uneconomically light patterns. We have so recently (March 13, 1885) discussed how and why such sacrifice is inevitable from the use of over-light rail sections, that it seems needless to refer to the matter more in detail.

The tonnage of the Pennsylvania road is something like 8,000,000 tons per annum over the rails referred to, which is equivalent to about 120,000,000 tons of total life, while on some of the minor lines of the Pennsylvania system the opinion, or perhaps it is more correct to say hope, is expressed that a life of 50 years may be attained, which is equivalent to about equal duty. All the indications in these reports are that by taking proper pains to secure a really good quality of steel and by using a rail properly proportioned to the locomotives running over it, viz., from 56 to 70 lbs. for the extremes of weight, a duty fully equal to this may reasonably be expected, and that it will often be exceeded. In proportion as the rail is unduly light, this maximum will be departed from, and there is so large a proportion of such light rails in the United States that it must seriously tell on the average life, although we may hope that the number of Consolidation engines running over 53 lbs. rails is small.

In view of these renewed indications that long life in *good* rails may reasonably be expected, it is a fact of melancholy interest that the reports referred to make it even clearer than before that the proportion of decidedly inferior rails which has been laid in this country is very considerable. Half a dozen of the roads at least make complaints, which differ only in form from the statement of the Indiana, Bloomington & Western that certain brands from "what are now considered second-class mills, have outlasted more than seven years, and the life of it is almost gone." That such rails exist is a fact familiar enough to almost every maintenance of way man as respects his own road, but it is far more forcibly impressed upon the mind by seeing some twenty different men bear simultaneous testimony to the same effect.

Nevertheless, it would be wearisome and profitless to repeat this evidence in detail, since after all the substance of the whole is merely this: There are very good rails, American and English, doing all that has ever been expected or claimed for steel rails. There are very poor rails, American and English, but far more American than English in this country, not rendering half or a quarter the service expected or received from other brands. The contradictory and heterogeneous facts submitted can hardly be said to prove more than this, but this they do establish, and it is well that it should be forcibly impressed upon the mind of every railroad man.

Furthermore, without mentioning roads by name, which would be both painful and needless, those who are moderately familiar with the practices of various roads, in the way of testing or not testing the quality of rails and other purchases before accepting them, will find certain clear indications in the scattered facts presented in these responses which go to show that those roads which make such tests have had no difficulty in getting very good rails, both English and American, while those who do not make tests complain loudly in frequent instances of "certain brands." The plain moral is that buyers get, not so much what they pay for as what they take pains to get; that the railroad company which buys rails without a rigid system of inspection has only itself to thank if it gets poor rails, and that when a majority, or even a considerable fraction, of the buyers buy without inspection, merely on the credit and word of the maker, they are doing all they well can to destroy the quality of the manufactures and to encourage poor manufacturers who either will not or do not know how to turn out a first-class article. We fear there is no doubt that whereas in England it is the exception to buy rails without some form of inspection and test, it has in this country heretofore been the exception to enforce or even attempt such tests. No doubt orders for export are on the whole less carefully scrutinized, but we apprehend that the buyers of no civilized country have as a class been quite so negligent in such matters as here. They could not well be more so, for many important lines have neglected absolutely to make any preliminary tests whatever. The fact that there have been many and prominent exceptions only serves to prove the rule.

It would be but a natural result from this state of things that while many makers, held to a stricter account or favored by circumstances or by a naturally honest disposition, should turn out as good rails as are produced anywhere, a certain minority at least should turn out very poor rails indeed. This, from the facts presented as well as from general knowledge, would appear to be the case, as also that the same condition of things exists to some extent in England; but whether more or less than here is a matter of no interest to the railroad man, as such; for if he have but ordinary intelligence he will know that if his criterion be no higher than the nationality of the manufacturer, there are or soon will be rails poor enough to suit his style of buying in any country. To buy rails simply on the ground of nationality is reducing imbecility almost to its lowest terms.

Rigid inspection and test are particularly necessary in buying steel rails because, to a far greater extent than was the case with iron rails, inferior quality is due to minute differences in processes of manufacture originating in a lack of care and skill quite as often, possibly, as in deliberate intention to deceive or skimp the quality. With iron rails there was an immense margin for fraud in this respect. The difference between the cost of good and bad rails was very great indeed. With steel rails there is of course a similar margin, but it is a very much smaller one; so small that, at first at least, all prominent manufacturers *intended* to make equally good rails, their failures being due chiefly to the lack of skill; for the manufacture of Bessemer steel, although a much cheaper and simpler process than the manufacture of good wrought iron, is also a more delicate process, in which minute differences of watchfulness or skill make a great difference in the quality of the resulting product. It is too plain for demonstration that such watchfulness can only be properly looked for from the buyer, for it is too great a strain on human nature to expect any large number of manufacturers to exert themselves to acquire skill, not to speak of spending money, for the sake of producing a better article than their customers demand or take pains to secure, especially when the defects of the article furnished will, in the ordinary course of events, not be revealed for many years. Some men will, influenced by broader views of their own self-interest and by stronger self respect, but more will not.

The moral for the railroad buyer, therefore, is to *prove all things*, and to accept only that which is good. By so doing good rails may be had at the same price as poor. Without so doing, poor rails will be given for the price of good, in whatever country they may be purchased; although a purchaser who happens to buy from mills which have usually turned out a good quality and been required to do so may sometimes escape the penalty which should properly follow from his carelessness. In the long run, it is the buyer and not the seller who must look out for the quality of his goods. Physical tests, by which the quality of rails can be determined with sufficient exactness in advance, have often been given in these columns. We will only repeat now that *bending* tests seem, on the whole, the most decisive, and fortunately they are about the easiest to use, if purchasers will not take the trouble to use more than one.

The Grand Trunk Report.

The Grand Trunk report for 1884 is much like that of the other trunk lines, though it has suffered much less from local competition than the New York Central and the Erie. The directors make comparisons with the results on two other roads, to show that they have done as well as their neighbors, and find the percentage of decrease in gross and net earnings to have been:

	Lake Shore.	Mich. Cen.	Grand Trunk.	Grand Trunk, C. & G. T., and Det. & Mil.
Gross earnings..	19 51	16.34	11.78	9.24
Net earnings ...	23.57	36.27	21.05	17.65

This is hardly a comparison with similar lines, for the Grank Trunk is chiefly an eastern trunk line, to be compared with the New York Central, etc., while the Lake Shore and Michigan Central are trunk-line connections, like the Chicago & Grand Trunk, parallel only with the western portion of the Grand Trunk. Most of the eastern trunk lines do not report for the calendar year, but the figures are ascertainable for the Erie, the Pennsylvania reports for the year, and there are some other western connections of the trunk lines besides those with which the Grand Trunk compares, and we add comparisons with some of these, the figures as above being the percentages of decrease in 1884 from the gross and net earnings of 1883:

	Penna.	Erie.	N. Y., Pa. & O.	P., C. & St. L.	Pa. western system.
Gross.....	4.9	15.8	17.5	12.5	9.7
Net.....	7.7	31.8	29.2	24.7	10 5

The comparison with all these except the Pennsylvania's lines, east and west, is favorable to the Grand Trunk. The new roads interfered more with the business of all these probably, than with that of the Grand Trunk.

The decrease in earnings and profits on the latter in the last half of 1884 (for which the report is made) extended to both passenger and freight earnings, and was greater in passenger than in freight—something very unusual—amounting to $696,300, or 19 per cent., while the decrease in freight earnings was but $455,825, though the total passenger earnings are not much more than half as great as the freight earnings. The passenger traffic as well as the fares fell off. Earnings from emigrant traffic fell off one half, but this made only about one-tenth of the whole decrease in passenger earnings. Through freight decreased, but there was a considerable increase in local freight, and the freight earnings were made smaller by a reduction in the average rate received from 0.85 to 0.75 cent per ton per mile.

This decrease of 0.1 cent per ton per mile was equal to one-half of the total net earnings from freight in the last half-year, but the average receipt remains larger than on such railroads as the Lake Shore and other western connections of the trunk lines, and rather more than on the Erie and the Pennsylvania Railroad.

The Grand Trunk report shows its decrease in passenger earnings to have been nearly three times as great in the second half as in the first half of the year, but its decrease in freight earnings was twice as great in the first half. The effect on dividends for the last half-year was increased by a large reduction in the income received from some of the Grand Trunk's investments. The International Bridge yielded but about one-fourth as much as in the last half of 1883 (when the Canada Southern used it), the Chicago & Grand Trunk 40 per cent. less, and the Detroit, Grand Haven & Milwaukee two-thirds less. The aggregate income from the investments in these properties and the Wellington, Grey & Bruce were $436,070 in 1883 and only $189,720 in 1884 for the half-year, and this decrease of $246,350 made a serious difference in the divisible profits in a half-year when the total net earnings were but $2,499,820, and prior charges $2,059,035, and the balance available for dividend from net earnings only $440,785. The 4 per cent. guaranteed stock took $521,975, and there remained for the first preference stock only $107,925, all but $7,460 of which was required to pay a dividend of ½ per cent. for the half-year.

The balance available for dividend last year was $1,808,115, or four times as great as this year, though the decrease in gross earnings was but 11¼ per cent. This is because only a comparatively small proportion of the earnings of this road are available for dividend even in favorable seasons. The working expenses absorb an unusually large proportion of the earnings of the road, because for a road with so thin a traffic its rates are exceptionally low. Its gross earnings per mile for the entire year were $7,340 last year and $8,380 in 1883

while other trunk lines earn $20,000 a mile or more. Its prior charges are small in amount per mile of road, but with net earnings as low as $2,120 per mile per year, as in the last half of last year, they do not leave much for the stock. After all its misfortunes, the Erie earned net $5,160 per mile last year.

Thus the shares of the Grand Trunk Company are in a decidedly weak position, because a comparatively small decrease in its gross earnings takes away the larger part of the income available for dividend, the more so as in good years a large part of this income comes from investments in other roads which are similarly affected by a reduction in rates or traffic.

Few American companies are likely to hear so many complaints from shareholders when profits fall off or anything goes wrong, as the Grand Trunk or other English companies. Its directors feel impelled to clear themselves from blame in such cases. In this report they discuss the notice of withdrawal from the Chicago and the trunk line pools which the Grand Trunk gave last winter. These pools, they say, have been a subject of the greatest anxiety to them, and their failure has involved serious losses to the company. They have urged the inclusion of the Lackawanna and the West Shore in the pools; but, in consequence of the competition between these and the New York Central, "the Grand Trunk Company found itself in the position of being limited to a disproportionate share of the general traffic without at the same time securing either permanency or reasonable remuneration in the rates, which were the only objects of the pools." In consequence of this it gave notice of withdrawal, but postponed it to give opportunity for a new arrangement. "The arrangements hitherto subsisting," says the Grand Trunk report, "proved to be binding only on companies acting in good faith, whilst less scrupulous competitors were only bound as far as they might think their immediate interests were concerned, and the directors and officers of the Grand Trunk Company, whilst feeling it might be better, rather than to repeat the experience of the past year, to have no pool at all, have done all in their power, and are still determined to continue to assist Mr. Fink in his arduous task, and they trust that the ruinous results to all the companies concerned of prolonged 'railway wars' may at length terminate in wiser counsels and combined action."

There are several of the Grand Trunk's competitors in this country who will probably characterize this passage as intended solely for home consumption, and affirm that the chief obstacle to the maintenance of rates has been the Grand Trunk management; but there are two, or rather many, sides to the question, and it is doubtful if there is any American company on which the stockholders exercise so strong a pressure in favor of a conservative management and the securing of the largest possible profit from the traffic.

The West Shore has at last made its report for the quarter ending with December last, showing $1,059,181 of gross earnings, while its working expenses and taxes were $1,244,195, or 117½ per cent. of the earnings. The rental accruing meanwhile was $111,295, and $29,827 of interest was paid, probably on receivers' certificates. There was a small income from other sources than the traffic, and the net deficit for the quarter was $207,219, which is less than was to have been expected. The condition of things in that quarter, however, was not quite as bad as it has been since. The cent-a-mile local passenger fare prevailed then except for the first two or three weeks, as it has since, and the through fares were about as low as they have been since. But the reduction in through west-bound freight rates early in January has deprived the road of nearly the only profitable traffic it had. The east-bound rates have been about as bad as in the fall. The road first had a considerable amount of this east-bound freight in the quarter for which it has just reported, which is usually the best quarter of the year for the trunk lines. It continued to have a large amount in January also, but comparatively little in February. It should reap its harvest from this traffic while navigation is closed, but there was very little to reap this year. It will not have to depend on railroad connections to get grain at Buffalo when the lakes open, and at a low enough rate might secure a large amount, but it must compete for it with the canal boats, like the other Buffalo railroads, and the boats are not likely to let any one get rich out of it.

Of eight companies' reports of earnings in March, published this week, the Northern Central has a small increase and the Minneapolis & St. Louis and the New York, Susquehanna & Western large ones, while the Gulf, Colorado & Santa Fe and the Reading have large decreases and the Memphis & Charleston a small one. The Northern Central's earnings were larger than in any previous March except in 1883. The Gulf, Colorado & Santa Fe reflects the very unsatisfactory traffic to be expected after two successive years of very bad crops in Texas, its March earnings having been:

1882.	1883.	1884.	1885.
$81,007	$148,406	$121,676	$95,445

In 1882 it was working less than 400 miles of road against 534 now, and there has been some increase in mileage since 1883, though earnings have decreased 36 per cent., and were but $179 per mile last March. The Memphis & Charleston, notwithstanding a small decrease this year, earned more than in 1883 or 1882, and the New York, Susquehanna & Western earned much more than in any previous March, as follows:

1882.	1883.	1884.	1885.
$51,219	$76,974	$71,704	$91,098

The reports are now mostly in, and in the aggregate the increases and decreases nearly balance each other, there having been some large ones of each. Of 79 railroads reporting, 50 had larger earnings this year, amounting to $1,786,276; but the aggregate losses of the other 29 were $1,487,858, so that the aggregate gain of the 78 was but $300,500, which is probably about 1 per cent., while there was a decrease in earnings per mile. Last year the March earnings were 10¾ per cent. less than in 1883, when, however, they were unusually favorable.

The Central Passenger Association had a meeting in Cincinnati last week, at which most of the roads interested were represented and very eager to set things to rights. It is feared, however, that the question of differential fares will prevent this, even if the commission question can be settled. But rates have already been so much improved since the organization of the Association at the Indianapolis meeting that it has well repaid all the efforts made.

There is a conference this week at Mr. Fink's office between the committee of the new "Central (Chicago) Association" and the trunk lines, which continues as we write. There will be a strong effort to make the Central Association successful, but the circumstances are such that most people have little hope of it for the present.

The Buffalo Coal Roads.

The recent settlement arrived at by the companies shipping bituminous coal into Buffalo may be cited as one of the few cases of an agreement between railroad companies to maintain rates in which a minimum is fixed, and which provides for conducting the business with only the smallest margin of profit both for shipper and transporter. How thoroughly demoralized the Buffalo coal trade was last year may be understood from the fact that the New York Central obtained its coal under contract last year for $1.60 a ton at Buffalo, which is undoubtedly the lowest rate at which any contract was ever made by any railroad for coal which had to be transported so far by another company, and mined off its own line. The Buffalo, New York & Philadelphia was the original or the most important coal-carrier into Buffalo, but the New York, Lake Erie & Western had mines on some of its branches, and the Rochester & Pittsburgh was completed through so that it could ship, if need be, quite as much coal as either of its competitors. The New York, Lake Erie & Western last year was willing to come to any agreement, either for a division of tonnage or the fixing of rates. The Buffalo, New York & Philadelphia was determined to protect the shippers along its line, and the Rochester & Pittsburgh had given the management of its soft coal business to Bell, Lewis & Yates. As a result, the miners as well as the companies were drawn into a competition which left them no profit upon their coal and gave the railroad companies no profit for carrying it. The New York Central contract was taken at $1.60 per ton delivered at Buffalo, and the business was of advantage to neither.

This year, however, there has been a change in the management which has made an agreement possible. The Coal Agent of the New York, Lake Erie & Western resigned and the three companies interested in transporting the coal came to an agreement under which a board of commissioners was appointed to fix the prices at which the coal could be sold. This board was composed of Ensign Bennett, of the Northwestern Coal & Iron Company, controlled by the Buffalo, New York & Philadelphia; George H. Lewis, of Bell, Lewis & Yates, managing the coal interests of the Rochester, & Pittsburgh, and Samuel Hines, President of the New York, Lake Erie & Western coal companies. They have agreed upon a minimum rate at which coal shall be sold at Buffalo and a minimum rate for transportation, leaving to each coal company and individual shipper to make contracts upon this basis at whatever price they may choose. The board of control also permitted certain concessions from the standard price to less desirable coal coming from the same market.

The rate is practically fixed for the year when the Grand Trunk contract is let, and this year it went at $2.40 for lump, $2.35 for lump and nut, and $2.20 run of mine, delivered at Suspension Bridge, the rates to the International Bridge being 15 cents per ton more. Part of the Grand Trunk contract at this time was taken by the Ohio Central at $2.02, delivered at Detroit. The sharpness of the competition in the bituminous coal trade is well illustrated by the agreement of three competing companies upon a rate so low as this. The cost of mining is 3 cents a bushel, or 75 cents per short ton, for mining and putting the coal on the cars at the pit mouth. Interest on the money invested in coal lands and the cost of development, new openings and repairs will reach at a low estimate 20 cents per ton and will often amount to as much as 30 cents. This makes the cost to the producer at the pit mouth 95 cents to $1.05 per ton. The railroads charge $1.40 a ton for hauling this to Buffalo, an average distance of 235 miles, or less than 0.6 cent per ton per mile. The cost of freight per ton-mile is not given in the reports of all the roads interested. On the New York, Buffalo & Philadelphia last year the average rate was 0.788 cent and the reported average cost 0.565, showing an average profit of 0.223 cent. The coal cars have to be returned empty, and it is questionable if the expense can be kept as low as reported last year. Even with a very large traffic there can be very little profit at the agreed coal rate, which, however, is not less than many railroads are compelled to accept in these days.

Dynamometer and Train Resistances on Government Railroads of Saxony.

We have received in pamphlet form a reprint, from Vol. 29, of *Der Civilingenieur*, of an inquiry by Mr. Beyer, Master of Machinery in Chemnitz, "to ascertain the Resistance of Railway Cars on straight and curved Lines, with reference to the Cars and the Apparatus illustrated herein."

As will be seen from the table below, the results obtained are of questionable value, since the apparently lawless fluctuations in some parts of the table as well as some of the absolute results obtained, as notably in the last line of the first table below, raise a presumption against the accuracy of the dynamometer which is in part supported by the description. Two different forms of dynamometer were used, one of which was essentially of the ordinary form, but run by a belt (which is well known to be liable to introduce error), while the other depends for its action on the elastic extension of a bar under stress, and for its accuracy on the principle that its extensions are proportional to its stress. Whether both instruments were actually used, and if so how well they checked, is not stated, but the author calls the results merely "preliminary trials" and not "final conclusions," which apparently means that they are regarded as more or less doubtful.

The most interesting feature of the tests is the character of the rolling stock experimented on. The axles (except in the last test) were "linked," *i. e.*, were connected together by radiating levers and cranks so as to require them (provided always there was no lost motion in the various bearings) to assume radial positions. In the two-axle car each axle was carried in a kind of truck-frame provided with a centre-pin and with radiating attachments as described. In the three-axle car, the middle axle had a traversing motion and was so connected with the end axles as to cause all three (with the trifling exception noted) to assume correct relative positions for passing a curve radially.

These cars thus fitted up were tested in three ways: (1) *coupled*, with the apparatus described in working order; (2) *free*, with the radiating connections from axle to axle disconnected, but leaving each axle free to assume any radial or other position independently of the others; (3) *rigid*, with the axles locked parallel to each other into a rigid wheel-base as recorded in the last line of the table. A car of the American type was also tested.

The tangent resistances are not materially different from what have been observed in this country, but it will be observed that the rigid axles always show a higher tangent resistance than when the axles are free to radiate, either independently or jointly.

The curve-resistances are on the whole very low, and, as stated, cannot properly be accepted as decisive. An interesting fact is the almost invariable and often very marked *reduction* of the curve-resistance at high speeds, a fact which has been observed by others, and is inherently very probable. The apparent exceptions to this law are mostly when the curve-resistance was very low, and may well be due to errors of observation.

Resistances in Pounds per Ton (2,000 lbs.) on Level Tangents and Level Curves.

Description of Cars.		Resistances on tangents at		Additional Resistance on Curves.					
				3° 51′ at		4° 22′ at		5° at	
Kind, number of axles and wheel-base.	Conditions of axles	12.4 miles per hour	21.7 miles per hour	12.4 miles per hour	21.7 miles per hour	12.4 miles per hour	21.7 miles per hour	12.4 miles per hour	21.7 miles per hour
Passenger, two axles, 16.4 ft. wheel base	Coupled	3.76	4.44	0.02	0.02	0.12	0.78	0.44	0.80
	Free	5.00	5.92	0.10	....	0.26	0.18	0.64	0.60
	Rigid	5.68	7.18	0.60	0.22	0.74	0.46	2.36	2.28
Freight, three axles, 22.93 ft wheel-base	Coupled	3.48	4.96	0.26	0.30	0.74	0.68	0.82	0.84
	Free	3.32	4.04	0.48	0.30	0.46	0.56	0.62	1.08
	Rigid	4.52	6.48	2.04	1.04	2.40	1.26	3.84	2.52
Freight, two axles	13.12-ft. rigid wheel-base	5.36	6.92	0.76	0.12	0.80	0.30	1.92	0.82
	16-ft. rigid wheel-base	4.50	5.62	0.10	0.24	0.26	0.30	1.12	1.10
Freight four axles, 18 ft. wheel-base	In two trucks	4.16	5.36	0.10	0.02	0.18	0.64	1.54	1.56

Some further tests on the same kind of rolling stock, and made in the same way, have recently been made on several other local lines in Germany, and are reported in the *Railway Engineer* of December, 1884, and January, 1885. The

resistances, reduced to *pounds per ton of* 2,000 *lbs.* were as follows:

Tangent Resistances, lbs. per ton.

Speed; miles per hour.	Extremes.	Mean.	
	1.8 to 3 4	2 4	coupled linked axles.
12.4	2.2 to 3.4	2.8	fixed linked axles.
21.7	2.8 to 3.8	3.7	coupled linked axles.
	3.6 to 4.4	3.8	fixed linked axles.
28.	4.6	4.6	coupled linked axles.
	5.6	5.6	fixed linked axles.

The curve resistances are so given that nothing definite can be determined from them, averages for long stretches of mixed curves and tangents being only given.

The decrease in Chicago through shipments eastward last week was so large that one might readily suppose that all at once rates were firmly maintained, but actually we understand that there has been some cutting—perhaps only a little—down to 15 cents. The through shipments of flour, grain and provisions for the week this year and last, and the through shipments of all freights in the corresponding weeks of four previous years, have been, in tons:

1880.	1881.	1882.	1883.	1884.	1885.
37,522	68,110	30,272	33,668	67,899	60,315

Thus the shipments this year were 11 per cent. less than last year and 1881, but much greater than in the other years.

For six successive weeks the total Chicago shipments and the percentage of them going by each road have been:

	Week ending—					
Tons:	Mar. 21.	Mar. 28.	Apr. 4.	Apr. 11.	Apr. 18.	Apr. 25.
Flour	23,753	20,236	22,267	22,108	22,681	18,771
Grain	47,087	44,805	46,894	54,188	40,050	34,875
Provisions	5,134	6,041	5,948	6,793	7,188	6,869
Total	75,947	71,082	75,109	83,089	70,519	60,315
Per cent:						
C. & Grand T	7.0	9.8	19.2	15.6	20.5	5.9
Mich. Cen	24.6	25.7	27.4	20.9	15.5	14.6
Lake Shore	11.8	6.8	4.6	5.6	4.8	7.0
Nickel Plate	8.9	11.3	9.4	9.3	7.8	7.3
Fort Wayne	19.3	21.1	19.8	18 7	25.6	29,5
C., St. L. & P	11.7	14.4	12.5	16 8	14.1	18.6
Balt. & Ohio	7.2	7.2	5.3	6.6	8.4	8.6
Ch. & Atlantic	9.5	3.7	1.8	6.5	3.3	8.5
Total	100.0	100.0	100.0	100.0	100.0	100.0

Thus the total shipments last week were one-seventh less than the week before, and 29 per cent. less than two weeks before. Of the whole decrease of 22,774 tons in two weeks, 19,313 tons was grain. The decrease in it was 36 per cent.; in flour, 15 per cent.; in provisions there was a slight increase.

The percentages are again irregular and suspicious. The Chicago & Grand Trunk, which had 20½ per cent. the week before, drops below 6; the three Vanderbilt roads together carried only 28.9 per cent., while the two Pennsylvania roads carried 48.1. The Chicago & Atlantic recovered from the very low place of the week before, yet carried a little less than its share. The transfer of the Great Western Dispatch from this road to the Fort Wayne tends, of course, to increase the share of the one and decrease that of the other.

The Chicago & Grand Trunk, which for two weeks had led in flour shipments, last week was sixth, and the two Pennsylvania roads led, the Fort Wayne carrying 35 per cent. and the Chicago, St. Louis & Pittsburgh 18 per cent. of the whole. It seems that the Grand Trunk had some time ago contracted for large shipments from Milwaukee which were to go by Grand Haven, but the long interruption of the passages of the steamer between Milwaukee & Grand Haven in the winter led to making the shipments *via* Chicago. This has tended to make the Chicago and Grand Trunk shipments larger than usual, even when the total Grand Trunk shipments from Milwaukee and Chicago together were no larger than usual, and have also increased the Chicago shipments by the amount that was diverted from the Grand Haven route, and this has doubtless been the case most of the winter, which was so severe that the Grand Haven route was closed for a long time, while the year before it suffered little or no interruption. Last week's report indicates that this diversion has ceased or else that other companies were underbidding the Grand Trunk for the flour shipments of the Northwest.

The large falling-off in grain shipments is probably largely or chiefly due to the near approach of the opening of lake navigation. There is usually a decrease then, and there was a very large one last year, though the open rail rate then was but 15 cents per 100, and very little more than the lake and canal rate, the shipments of flour, grain and provisions falling off week by week from the maximum of 97,653 tons in the week ending April 12 to 61,335 in the week to May 3, which was the first of open navigation.

The Lake Erie & Western Railroad has gone into a Receiver's hands, after a hard struggle against fate. It is one of the roads north of the Ohio which during the late "boom" was to get rich out of through trunk-line traffic. Its trouble, in the first place, was that it never got much of that traffic, and next, most that it got was not worth having. Great expectations were cherished about 1879 that it would take the place of the Wabash as a connection of the Vanderbilt roads. At that time there was a good deal of talk of the Wabash's getting an outlet of its own to New York and cutting free from the Lake Shore, the New York Central, etc. Then these roads were to turn over to the Lake Erie & Western all the traffic they had formerly forwarded by the Wabash. Mr. Vanderbilt had taken a large interest in Lake Erie & Western stock, and it would be worth par by the end of the year. It was never shown how it could take the place of the Wabash, except for a comparatively small part of the traffic, but that did not prevent the stock's going above 65. The Receiver is appointed on application of floating-debt creditors to the amount of $330,826, but it is presumed that the interest due May 1 on the $2,500,000 first-mortgage bonds of the 200 miles of the road between Lafayette and Bloomington will not be paid.

The road is not heavily bonded, there being but $4,642,000 of 6 per cent. mortgage bonds on the 386 miles of road, requiring net earnings of but $722 per mile, interest on the $3,065,000 of 7 per cent. income bonds being payable only if earned. But the road has only in one year earned its obligatory interest, and in the year ending with June, 1883, did not earn a quarter of it. There is scarcely any part of the country where it is so hard for a railroad to earn a respectable profit as the district in which this lies, between the lakes and the Ohio River. This district is fertile and well peopled, but it is crowded with railroads, and, most of all, it is so situated with respect to lake ports and other competing points that most of the traffic originating on the line must be carried at through trunk-line rates, which ordinarily yield little profit except to roads which carry an immense amount of it, and a good part of the time not even to these. The reports of the Lake Erie & Western indicate that the *expense* per ton per mile on it was considerably greater than the *receipt* on such competitors as the Lake Shore, the Cleveland, Columbus, Cincinnati & Indianapolis, etc.

The Northern Central Railway does not follow the fashion with its March business, for it reports a considerable increase in gross earnings and a larger decrease in its working expenses, resulting in an increase of no less than 25½ per cent. in net earnings, while the Pennsylvania Railroad meanwhile suffered a decrease of 17¼ per cent.

The Marquette, Houghton & Ontonagon Railroad reflects tolerably the condition of the iron business by the fluctuations in its net earnings. In 1879 these were $275,743, on 88½ miles of road; in 1882 they had risen to $623,176, from 98¾ miles; last year (ending with February last) they were $330,291, from 138 miles. Per mile of road the fall is from $6,312 in 1882 to $2,393 in 1884. In such times as these the road suffers not only from a falling-off of traffic (which is not so great in the case of Lake Superior ore as might be supposed), but from the necessity of reducing rates. These are comparatively high for so coarse a freight, or would be if the haul was not very short, amounting in 1883 to 3.41 cents per ton per mile. The average haul, however, was but 24 miles.

In spite of the hard times and the sorry experience of the new competitors of the trunk lines, the work of constructing the South Pennsylvania Railroad between Harrisburgh and Pittsburgh is continued. Work has been in progress for nearly two years upon all the tunnels, and most of them are nearly, if not quite, half through. The enterprise has been prosecuted with due regard to economy, and no extra expense has been incurred in order to hasten the completion of the line. During the past winter the assessments upon the original subscription of $15,000,000 have been only 2 per cent. a month, instead of 5 per cent. as theretofore, and about $4,000,000 has been expended thus far.

A meeting of the promoters of the enterprise was held this week for the purpose of consultation as to the advisability of pushing the work in the present depressed condition of industry and the prevailing low rates for transportation. It is reported that after a careful investigation of the revised estimates presented by Chief Engineer Robert H. Sayre, it was unanimously determined to push the work with vigor, so that it will be finished by July 1, 1886. The cost of doing work now is less than at any time since 1879, probably, and it is said that it is 20 to 30 per cent. less than was paid in building the West Shore. The price for rock-work is more than one-third less, and for filling about 25 per cent. less.

The Western terminus of the road has not yet been definitely fixed. Three plans are proposed after the line reaches Somerset. The Lake Shore interest in the Pittsburgh, McKeesport & Youghiogheny has urged that the line be made to stop at that point and make connection there with the Somerset & Cambria Branch of the Baltimore & Ohio, and reach Pittsburgh over that line, the Pittsburgh & Connellsville and the Pittsburgh, McKeesport & Youghiogheny, thus using the full length of the latter road, which gives the new line a traffic guarantee. The Pittsburgh interest, which controls very nearly one-half of the whole, while Mr. Vanderbilt himself is said to own a full third, is strongly in favor of going straight across Westmoreland County to a point on the Pittsburgh, McKeesport & Youghiogheny only 11 miles east of Pittsburgh. This would give a line only 219 miles long between Pittsburgh and Harrisburg, and if the shorter of the two routes surveyed through Westmoreland is adopted, the distance will be reduced seven miles more. The grades along the shorter route are an objection, however, but as it is an easier line to build, it is quite probable that in view of the large passenger traffic which the road hopes to secure, the gain in distance will be thought more than sufficient to compensate for the increase in the grade. The great objection to the adoption of the Lake Shore plan for the use of existing roads is, that all the gain in distance between Pittsburgh and Harrisburg as compared with the Pennsylvania Railroad would be lost. Shortness is considered a very important feature; as with a branch line down the Conecochegue the South Pennsylvania route between Washington and the West would be 105 miles shorter than the Pennsylvania and 60 less than the Baltimore & Ohio. With the Baltimore & Ohio owning a large part of the line, moreover, the South Pennsylvania would not be independent; but the saving in cost of construction would be important.

It is the intention of the company to build a single track at first, with about 40 miles of sidings, and construct the second track after the road is opened through. The company is authorized to issue $20,000,000 of first-mortgage bonds, and the same amount of stock. Bonds to the amount of $15,000,000 have been subscribed for, with a bonus of stock.

The locomotive engineers of the Delaware & Hudson Canal Co. are reported to oppose an examination for color-blindness which the company proposes to make, and to threaten to strike rather than submit to it. They say they do not object to an examination to show their ability to distinguish the signals themselves, but to the scientific method of ascertaining color-perception, with the Holmgren colored yarns.

Color-perception cannot be tested by signals, for the reason that usually they can be distinguished by the color-blind by other visible qualities than their color. Of course, if they could always be so distinguished there would be no objection to a color-blind engineman. But what the color-blind see in a red or a green light is not always the same. Under certain circumstances he sees just the same in green light as in a red light, but it is not often possible to examine men under those circumstances, or even to know just when they exist. Colored yarn is used because it can be distinguished by nothing but its color, and when a man puts a red or pink yarn with the pile of green yarn, it is proof that he does not distinguish the color red from the color green. There is somehow a feeling that the scientific test demands delicacy in color-peception. But this is not the purpose; it is to determine whether the person examined is able to distinguish objects by their color alone. What the color-blind sees is a more or less dark object. His very lack of color-perception is likely to increase the delicacy of his perception of light and shade, and two colors like red and green, under exactly the same circumstances, are of different degrees of darkness. But put them in different lights, or otherwise change the light reflected by them, and one may become just as light as the other, and no more to be distinguished from it than two colors of equal lightness in a photograph.

If the color-blind could never distinguish a red light from a green one there would be no need of an examination; the defect would become manifest on the very first trip. It is because the defect is not obvious that it is necessary to test for it at all.

Certainly the enginemen have no right to say what tests shall not be used. The officers in charge of the road are responsible for its safe operation, and they must adopt such tests as they know they can trust. It is doubtless true that the danger from color-blindness is not a great one, because the cases are few when the color-blind is not able to distinguish signals, though he does not distinguish them by their color; but it always may happen that the circumstances will occur when he cannot distinguish the signals, and it is to eliminate this chance that the tests are made. If made at all, they certainly should be so made as to show whether the man knows red from green by their redness and their greenness, or only by their different degrees of grayness, so to speak.

A correspondent of the *Pall Mall Gazette* compares the fast trains of this country, and easily shows that there are a great many more fast trains—40 miles an hour or more—there than here. There never was any question about that among well informed people. We have felt justified in some complacency because we have a few trains which make as good time as the fastest fast trains abroad. There are, perhaps, but half-a-dozen such trains here, and of those which are not the fastest, but run 40 miles an hour or more, there are scarcely as many here, while there are scores and perhaps hundreds in England.

The exports of rails from Great Britain to the United State in the month of March last were but 25 tons. For the three months ending with March they have been for years

1880.	1881.	1882.	1883.	1884.	1885.
42,589	47,890	72,710	14,880	6,857	211

The exports to most other countries have also fallen off largely compared with last year, but there is a large increase in those to Egypt, all made in March, and intended doubtless for the Suakim & Berber military railroad, and there is also a very large increase in the exports to Canada, which took scarcely any in these three months last year, and some increase in the exports to India. Altogether the British exports of rails to countries other than the United States in this quarter were but 6 per cent. less than last year, but they were 34 per cent. less than in 1883. Of the total British exports this year 33 per cent. went to India, 21¾ to Australia, 11⅛ to Egypt, and 9¼ to Canada, leaving 25 per cent. to all other countries. Mexico took but 383 tons, against 521 tons last year and 9,864 in 1883.

Mr. Jeans, Secretary of the British Iron Trade Association, has collected information of the rates charged for carrying ore in different European countries, and gives the following as the average haul, rate per ton per mile, and total charge in England and on the Continent:

	Rate.	Haul.	Total freight charge.
England	2.04 cents.	45 miles.	92 cents.
Continent	1.10 "	138½ "	152 "

These doubtless are the averages in the cases of which Mr. Jeans has information, for it is not possible for him or any one else to get complete information. The rates given appear moderate for so short hauls, but ore is usually loaded and unloaded by the shipper and receiver, and not by the railroad, both in England and on the Continent, and in England it goes largely in full-train loads.

This is not always the full freight charge the ironmaster has to pay on his ore, for great quantities are brought by sea, especially from Spain, which to England is comparable to the carriage of Lake Superior ore to Cleveland in this country, but to Belgium and Germany is longer. Now that the Continent competes so much more sharply with England than it used to in the manufacture of

iron, the difference in freights may often make the difference between ability or inability to fill a foreign order. In this matter, however, the railroad companies as well as the ironmasters are interested. If the works refuse the order, the railroads lose the freight both on ore and the product exported, and they in a great many cases grant large rebates on goods exported.

The use of triple expansion marine engines in which the expansion takes place in three cylinders in succession is fast spreading, and it is reported that over 150 steamers are now equipped with this most economical form of engine. In many cases, the consumption during long voyages of 40 days' continuous steaming is as low as 1.6 lbs. coal per indicated horse-power per hour. Pressures formerly used only in locomotives, viz., from 125 lbs. to 160 lbs. per square inch, are found to give excellent results. The highest pressure used at sea in the usual style of compound engines is 110 lbs., though in a few exceptional cases higher pressures have been tried. This further successful application of the compound system on board ships will probably lead to some further use of the compound system on locomotives. A great many difficulties had to be overcome before the compound marine engine was finally established as preferable to engines in which the whole expansion took place in one cylinder. Difficulties of a different nature, relating to the great variations in power required in a locomotive, must be looked for in applying the compound system to locomotives. But it seems quite probable that, with suitable proportions, tractive force may be more easily varied by the use of two cylinders of different sizes, than by the use of two exactly similar cylinders.

Record of New Railroad Construction.

Information of the laying of track on new railroads in the current year is given in the present number of the *Railroad Gazette* as follows:

Boston & Lowell.—A branch is completed from Bedford, Mass., northward to North Billerica, 9 miles.

This is a total of 9 miles, making 308 miles thus far reported for the current year. The new track reported to the corresponding date for 14 years past has been:

	Miles.		Miles
1885	308	1878	267
1884	595	1877	269
1883	1,071	1876	432
1882	2,283	1875	220
1881	906	1874	375
1880	1,096	1873	654
1879	391	1872	1,070

This statement covers *main track only*, second tracks and sidings not being included.

NEW PUBLICATIONS.

Table of Cubic Yards in Lengths of 100 Feet. For the Calculation of Earthwork by the Method of Averaging End Areas. By S. B. Fisher.

This table is published on a card about 12 by 14 in. and gives quantities in cubic yards for each foot and half-foot of average end area up to 1,000 square feet, corresponding to about 21 ft. of centre height. The card is in convenient form for the use of engineers, and is sold at the low price of 15 cents, or "two for a quarter." The same table in substance is contained in Cross' Field-book, Howard's, Morris' and Trautwine's Earthworks, and various other publications. Its convenience would have been improved and the awkwardness of half-feet, as well as the trouble of dividing by two, avoided, had it been printed to give quantities for the *sum* instead of the *half-sum* of the end areas; which would have involved the merely formal change of printing the areas as running from 1 to 2,000 instead of from ½ to 1,000. A small table of corrections by the prismoidal formula for differences of (actual) centre-heights might also well have been added, as it would have taken but a few lines of space, and would have removed the only serious objection to computing quantities by averaging end areas; which is that, although for the great majority of the solids computed it is near enough, yet when the differences of the centre-heights are great the error becomes considerable and should be corrected, it being in proportion to the *square* of that difference, so that while the error is only 3.7 cubic yards for a *difference* of 2 ft. in centre-heights (regardless of what the actual centre-heights may be) yet for a difference of 8 ft. it is 59.3 cubic yards, or 16 times as much. This simple method of correction, which may be said to involve no appreciable labor, is probably more accurate than all the elaborate methods of applying the prismoidal formula by reducing to level section or otherwise, and it is too little used.

Notes in Tennessee.

KNOXVILLE.

Knoxville is so favorably situated as regards a plentiful supply of coal and cold-blast charcoal pig that it is not surprising that the town possesses several iron-working establishments, and is rapidly growing in size, its population in 1884 being estimated at 20,706 white people and 4,124 colored. It is regarded as a very healthy place, and malaria is said to be unknown. The coal is chiefly found between Knoxville and Jellico, a point on the Kentucky state line almost due north of Knoxville. A great variety of lumber is also found in this region and up the Clinch River, the yellow poplar especially being of large size and in many cases handsomely figured. Lumbermen complain, however, that lumber is hard to get and still harder to raft down, the rivers rising and falling very suddenly.

Knoxville is the headquarters of the East Tennessee, Virginia & Georgia Railroad, which has just passed into the hands of a receiver. It seems to be anticipated that this gentleman, Major Fink, will effect some much needed improvements in the equipment and service of the road, bringing it in the next four or five years into the same state of general efficiency as the Norfolk & Western, of which he had charge as Receiver for some time. At present the contrast between the two roads is remarkable, whether as regards equipments, road-bed or stations. The road-bed of the Norfolk & Western is excellent, and the trains run at high speed round the sharp curves on the grades crossing the Alleghenies without jolt or a murmur. On the East Tennessee in many places mud is the only ballast; and the rough condition of the track, the frequency of accidents, and the state of the stations, shops and engines indicate that considerable improvements are necessary before the road can be considered in good working order.

The locomotive and car repair shops at Knoxville are old and not equipped with a superfluity of modern tools. It is contemplated, however, to erect new shops on a convenient site a short distance from the station. The only work in the shop at the time of our visit was one engine and two cabooses rebuilding, and two new boilers nearly completed. The cabooses are of the ordinary four-wheel type, with extra heavy axles, larger than the M. C. B. standard, and semi-elliptic bearing springs, the ends being hung with links. These cabooses are said to ride well, but being short are apt to mount the pilot in a rear collision. As the regular passenger trains are few in number and often run at inconvenient hours, many local passengers travel on the freight caboose, a somewhat crowded and inconvenient substitute for an accommodation train.

The Southern Car Works have shops conveniently situated near the main line of the East Tennessee. They have only been established three years, and, after having built some 2,000 freight cars during the last eighteen months, are now shut down for want of orders. The last order executed was for 500 cars for the East Tennessee. These cars have grain doors, and small end doors for loading lumber. The edges of the openings are iron bound. The trucks have swing bolsters, and the draw timbers are trussed in the manner used on the Norfolk & Western.*

The Knoxville Car Wheel Works is a small establishment, turning out about 60 wheels a day, but it has plenty of orders, and the manager (a Northern man) seems equally contented with the climate of Knoxville and the state of business. Local pigs are used, the works owning two out of the numerous cold-blast charcoal furnaces in the neighborhood. Test pieces from each cast show great uniformity of chill, the depth being ¾ in. on the test piece and about ½ in. on the wheels. The ladles are cooled with water before pouring, so that the iron may not be unnecessarily hot, causing excessive contraction. The wheels are good, smooth castings. Many of the wheels for short roads are sent away fitted on axles ready for use under cars.

The Knoxville Iron Works are one of the few establishments in the South rolling rails. Even this mill confines itself to light rails. A brisk demand is reported for light sections of iron rails weighing 12 lbs. to 20 lbs. per yard, used chiefly for logging roads. Rails are also made for street railroads. As cold-blast charcoal pig is largely made in the immediate vicinity, and as old rails and other scrap iron can always be procured at reasonable prices, raw material of varying quality is always at hand, and any desired quality of iron can be produced. Specimens of the iron made here show considerable ductility and fibre under both hot and cold tests.

Besides rails, plates and bars, nails, hot-pressed nuts and coiled steel car springs are made. About 240 kegs of nails are made daily by 41 machines placed on the first floor, instead of on the ground floor, as usual. The nails fall through shoots into bins placed on the floor below as fast as made, and are there packed.

The management of these works has been very successful in employing colored labor in many capacities which are usually regarded as requiring peculiar skill and experience. Both white and colored men are employed as puddlers, heaters, rollers, etc. Colored men are also employed as miners in the coal mines. It might be thought that the colored men would prove inferior in skill and industry to the white man, but would be better able to stand heat. This is said not to be the case. Many colored men, like many white men, cannot stand heat, and though there are some idle and poor workmen among the colored men, yet on the whole they are found to work well and steadily, and if treated fairly, all contracts, whether written or verbal, being faithfully adhered to by the employers, no trouble is experienced from strikes or wages disputes. It is also said that white and colored men work amicably together, and as regards skill are found more on the same level than is generally supposed.

The effective utilization of colored labor in manufactures is of immense importance to the South and carries with it many possibilities.

* For illustration and description, see *Railroad Gazette*, page 577, Aug. 8, 1884. This device is also shown in figs. 391-394, Car Builders' Dictionary.

Foreign Railroad Notes.

The railroad debt of Prussia, April 1, 1880, was $374,714,525; four years later it was $776,946,296; and with the purchases and new construction now contemplated the administration estimates that it will be $1,000,122,000 April 1, 1886.

The Prussian railroads have agreed upon fares for children as follows: Under four years old, free, when a seat is not required; between four and ten years, half fare, for all classes and trains, and an allowance of 12 kilograms (26½ lbs.) of baggage instead of the 25 kilograms allowed for a full fare; above 10 years, full fare.

The Prussian State Railroads next summer will carry parties of children sent out by societies for a holiday to and from the place to which they are sent at what is called the "military fare," which is 0.52 cent per mile in third-class cars.

The Prussian State Railroads made a less favorable return in the year ending with March, 1884, than in the previous year, owing to a very large increase in working expenses (10.1 per cent.), which were 53.8 per cent. of the earnings in 1882–83, and 57.3 in 1883–84. The net earnings of the roads were 5.18 per cent. of their cost in the first year, and 4.89 in the second.

The management of the Belgian State Railroads has recently completed a contract with the Belgian Grand Central Company, which owns most of the private railroads in Belgium, by which all competition between the two systems will in future be avoided.

An association in Dusseldorf complains that at the bars in the state railroad stations liquor is sold too freely, not only to passengers, but to employés, and not only to be drunk on the premises, but to be taken away. The cheapness of the liquor makes the matter worse. A glass can be had for 1¼ cents, and half a wine bottle (a little less than a pint) for 6 cents, which latter is also the price of a cup of coffee. The Dusseldorf association recommends that the price of liquor be doubled or trebled, and that of coffee reduced to 1¼ or 2½ cents.

The management of the Prussian State Railroads proposes to establish more of the shops for instruction which we have heretofore described, with a view to supplying better training than is obtained in private shops for mechanics who are to become locomotive runners, car-builders and foremen in shops. As a rule, men who have been apprentices in the repair shops of the State Railroads seek work in these shops for instruction after finishing their apprenticeship, and then for the most part become excellent enginemen and master workmen. Apprentices in these shops serve four years and receive meanwhile systematic instruction in shop practice, and also attend school, and receive daily wages varying from 10 cents to 64 cents, 10 per cent. being withheld till their apprenticeship is completed.

A contributor to the leading German railroad journal (*Zeitung des Vereins deutscher Eisenbahn-verwaltungen*) proposes a radical change in the passenger fares and regulations, which he summarizes as follows: 1. Reduction of the four classes to two; 2. Introduction of smoking compartments; 3. Introduction of a single class of sleeping cars in all great night trains at reduced rates; 4. Reduction of fares to 1.56 cents per mile for the first-class and 0.78 cent for the second-class (the present) rates being 3.13 and 2.34 cents, and there being a rate of 1.56 cent for the third class and 0.78 for the fourth class, which the plan proposes to abolish); 5. Abolition of all round-trip and similar tickets at reduced rates; 6. No baggage to be carried free, but the present rate on extra baggage to be reduced; 7. Introduction of workingmen's trains and workingmen's tickets at reduced prices.

The statistics have always shown that the first-class cars in Germany are little used; but this writer says that the demand for them is even less than the statistics indicate, because the people who most commonly ride in them are the higher railroad officers. On one of the state railroad systems in the year to March 31, 1883, only *three* passengers out of every *thousand* traveled first-class, so that most of the trains must have no first-class passengers at all.

The same writer has the audacity to propose that smoking should be forbidden in the German cars, except in special compartments set apart for smokers—that is, that the Germans should do as is done in the rest of the world as regards smoking in the cars. He says that they ought to make an end of the disregard of others' feelings with which heretofore the smoking minority has tyrannized over the great non-smoking majority, including the women—which is rank heresy in Germany, where everybody smokes everywhere.

THE SCRAP HEAP.

Double Duty for the Baggage Man.

The other day a woman shipped her husband's remains and a dog over the New York Central road. At Albany she appeared at the door of the baggage-car, to see how they were getting along.

"How does he seem to be doing?" she asked, with a sniff.

"Who—the corpse?" inquired the baggage-master, kindly.

"No, the dog."

"Oh, he's comfortable," replied the baggage-man.

"Anybody been sitting down on him?"

"Who—the dog?"

"No, the corpse."

"Certainly not," answered the baggage-man.

"Does it seem cool enough in here for him?"

"For who—the corpse?"

"No, the dog."

"I think so," grinned the baggage-master.

"Does the jolting appear to affect him any?"

"Affect who—the dog?"

"No, the corpse."

"I don't believe it does."

"You'll keep an eye on him, won't you?" she asked, wiping a tear away.

"On who—the corpse?"

"No, the dog."

And having secured the baggage-man's promise, she went back to her coach apparently contented.—*Exchange.*

The Value of Courtesy.

The Railway and Tramway Express observes that there is in every man's heart a feeling which responds more readily to kind words and courtesy than to rude authority. "Oblige me by doing this," is the language of courtesy, and is dictated solely by a gentlemanly feeling. In speaking to those from whom obedience could be exacted in the most authoritative terms, we lose nothing by exercising a little courtesy. We

who have mixed with all classess of railway men, from the navvy to the manager, have often heard the exclamation, "Ah! he was a gentleman," in reply to some observation on a by-gone official. On sifting the matter, we find the opinion, so voluntarily given, had been based on a single kind word or encouraging sentence, uttered, may be, ten, twenty, or thirty years ago. Bearing this in mind, have not our managers and chiefs some incentive to cultivate a kindly feeling with their staffs? Have they not a golden reward in the universal regrets that follow to the grave all who have aspired to the title of gentlemen?

Carlyle's First Railway Ride.

The whirl through the confused darkness on those steam wings was one of the strangest things I have experienced—hissing and dashing on, one knew not whither. We saw the gleam of towns in the distance—unknown towns. We went over the tops of houses—one town, or village, I saw clearly, with its chimney heads vainly stretching up toward us—*under* the stars; not under the clouds, but among them. Out of one vehicle into another, snorting, roaring, we flew; the likest thing to a Faust's flight on the devil's mantle, or as if some huge steam night-bird had flung you on its back, and was sweeping through unknown space with you, most probably toward London.—*Carlyle's Letters.*

A Terrible Accident.

A letter from Yale, British Columbia, says: "A frightful accident occurred on the Western Division of the Canadian Pacific road, 50 miles above Yale, on the night of Feb. 25 last, no account of which has hitherto been printed. An engine, drawing 20 lumber-laden cars and a caboose, was bowling rapidly down the winding track along the Fraser River. On one side were cliffs reaching to a height of 3,000 feet, occasionally cut through by frowning cañons, spanned by high trestles. A hugh boulder, loosened by the storm, had dropped from its heights at the entrance of one of these trestles, and Engineer Evans did not see it in time to prevent a collision. The engine, after striking the boulder, shot from the trestle, followed by the tender and four cars. The engine described a great arc, landing across the gorge 100 ft. away, and then slipping 150 ft. down the sloping granite wall to the brink of the river, where it stopped. Engineer Evans remained in the engine, and strange to say, was uninjured, though both the cylinders were broken and the engine otherwise badly wrecked. Fireman Gascoigne, who leaped from the tender down the side of the gorge, was seriously injured, though he is now fast recovering. The four lumber-laden cars were reduced to a mass of splinters on the rocks below, while 10 passengers in the caboose in the rear, which remained on the track, were uninjured save a few bruises."

Sugar.

"What do you suppose I'll look like when I get out of this?" snapped a young lady at the conductor of an overcrowded car.

"A good deal like crushed sugar, Miss," said the bell ringer.

And the lady hung on to a strap, and rode four blocks further, with the smile of an angel.—*San Franciscan.*

Advice to Dead Beats.

Mr. Petroleum V. Nasby being recently in Washington with neither money nor a return ticket, and being averse to walking all the way to Kentucky, gives the following description of the way in which he prepared for his journey:

"But after givin it matoor considerashun I made up my mind that I wood not walk home, no matter how good we mite expect to find the roads, and I immejitly sot about makin preparashuns for the jerney.

"First, I stole uv a confidin shoemaker, wich I knowd, a solid, substanshel leather apern, and folding it in three folds so ez to present the greatest resistance, with a proper degree uv flexibility, I tacked it keerfully in the seat uv my trowsis.

"'Wat is that fur?' asked my frend.

"'Never yoo mind!' I replied, 'Ef yoo undertake to beet the conductors atween here and Looisville yoo will assertane wat that is fur. My advice to yoo is to go and do likewise.'

"Wise in his own conseet he laffed me to skorn and started without perteckting his reer, wich no good General wood do."

A very few interviews with conductors on the road sufficed to disable the friend, while Mr. Nasby's protected rear enabled him to continue his journey in comfort, even when numerous changes of train were necessary. In concluding his narrative he gives the following warning:

"It doesn't matter to me, who hez ben kicked off uv every trane in the Yoonited States, for I am accustomed to greef, but to a man which is inexperienced and unaccustomed to sich things, it is terrible. The conductors wear very heavy boots, and the brakemen, from long eggsperience, hev acquired a skill in kickin that is feendish. They kick with the percision and force uv a mule, and they know the exact pint to hit to inflict the most agony. It is onpleasant to be compelled to lie on yoor abdomen nites, even though the hay in a barn is soft."

An International Episode.

That was a sharp repartee of Charles E. Pugh's, in the days when the General Manager of the Pennsylvania Railroad ran a train between Pittsburgh and the East. He was annoyed by a trio of Englishmen who persisted in standing on the platform.

"Gentlemen," said young Pugh, "you must come inside. Passengers are not permitted to stand on the platform."

"We prefer to stand here," said one of the tourists, haughtily.

"The company prefers you to stand inside."

"We don't care what the company prefers."

"The rules are imperative. You must go inside."

"Suppose we refuse?"

"Then—" and the eyes of the conductor flashed ominously —"then I shall put you in."

The trio looked at the brass buttons and the blue coat, and then at the determined face.

"We'll go in," said the spokesman, "but it's a beastly h'outrage. Beastly country, this, where a man can't do as he likes on a train."

The conductor smiled maliciously.

"Nearly as bad as being locked in an English coach," he retorted.

The tourists only scowled.—*Pittsburgh Chronicle-Telegraph.*

TECHNICAL.

Locomotive Building.

The Manchester Locomotive Works in Manchester, N. H., have an order for 3 locomotives with 17 by 24 in. cylinders, for the Boston & Lowell road.

It is reported that the Receivers of the New York, West Shore & Buffalo road have placed an order for 20 locomotives with one of the Paterson shops.

The Mason Machine Works in Taunton, Mass., are building a double truck locomotive for the Nantasket Beach road.

The Car Shops.

The Burton Stock Car Co. is having 100 stock cars of its peculiar pattern built at the Laconia (N. H.) Car Works.

Noble Brothers & Co. in Anniston, Ala., are filling several large orders for car wheels, and have work enough on hand to keep their foundry busy for several months.

The Laclede Car Manufacturing Co. in St. Louis has recently received orders for 35 cars for street railroads.

Iron and Steel.

The Anniston Iron Co. is preparing to build two new blast furnaces in Anniston, Ala. They will use coke as fuel.

It is reported that the Pratt Coal & Iron Co. is preparing to build a new furnace on its property near Birmingham, Ala.

The Helmbacher Forge & Rolling Mill Co. is running its works in St. Louis at about half their capacity.

The works of the Joliet Steel Co. in Joliet, Ill., have been closed for the purpose of making extensive repairs.

The New Albany (Ind.) Rolling Mill has resumed work on rails and is running full time.

Tecumseh Furnace at Tecumseh, Ala., is to be changed from a charcoal to a coke furnace.

The Phelps Manufacturing Co. in San Francisco, makes heavy forgings of all kinds and does a considerable business in axles and other car forgings, bridge-work, and generally in all sorts of forgings. The company has been very successful, in spite of the disadvantages under which all iron works in California labor, the high price of new material and the competition of the large Eastern mills.

Manufacturing and Business.

The office of Mr. Charles R. Johnson, Signal Engineer of the Union Switch & Signal Co., has been removed from No. 15 Cortlandt street, New York, to the general office of the company in Pittsburgh, Pa., where the business will hereafter be transacted.

The Morgan Engineering Works, at Alliance, O., are building a traveling crane of 50-ft. span, with a lifting capacity of 30 tons, for the machine shops of Robinson, Rea & Co., in Pittsburgh.

The Rail Market.

Steel Rails.—The market is somewhat firmer, and makers are reported to be unwilling to quote less than from $27@$28 per ton at mill, the lower figure being for orders especially desirable. A good many small orders have been taken at about $27.50, and it is said that some large orders could have been placed had the mills been willing to take $1 a ton less.

Rail Fastenings.—Quotations are nominally unchanged at 1.90@2 cents per lb. in Pittsburgh for spikes; 2.25@2.60 for track-bolts, and 1.60@1.70 for splice-bars. Few sales are reported.

Old Rails.—Sales of old iron rails are reported at $17 to $18 per ton in Philadelphia. The market is somewhat unsettled, and buyers look for lower prices. Old steel rails are quoted at $16.50 to $17.50 per ton in Pittsburgh.

Car Couplers.

The Old Colony Railroad has been testing the Hilliard automatic coupler on a few cars, and has ordered 25 more cars to be fitted with the coupler, in order to give it an extended trial in active service.

New England Railroad Club.

The regular monthly meeting of the New England Railroad Club was held April 22 at the rooms in Boston, President Marden in the chair. The subject of transportation to the annual meeting of the Master Car Builders' Association was the first business. The Secretary reported that replies had been received from some 25 gentlemen, who expressed a desire to go by water. The committee appointed at the previous meeting was continued.

The subject for discussion was Rolling Stock for Suburban Service, and it proved one of the most interesting subjects yet brought before the club. It was participated in by Messrs. Richards of the Boston & Providence, Griggs of the Providence & Worcester, Lauder of the Old Colony, Stewart of the Fitchburg, Coleman of Providence, Waitt of the Eastern, F. D. Adams of the Boston & Albany, and Marden of the Fitchburg. The style of locomotives and cars in Europe were compared with those of this country, and in some respects the former were admitted to be the better, though generally the European style of cars was thought to be behind the age in this country.

The subject of a standard truck was called up, and on motion the club indorsed the standard truck of the Master Car Builders. Adjourned.

Western Society of Engineers.

The 207th meeting was held in Chicago April 21, President Williams in the chair.

Mr. Artingstall, for Committee on Topics, submitted report as amended. On motion this was accepted and adopted.

In response to request at the last meeting, Mr. Zellweger offered the following suggestion:

1. To establish a question box, into which any member may deposit clearly defined questions (signed by the inquirer), and dated.

2. To take up the questions one by one in the order of their dates, by submitting them to the Report Committees who may answer them immediately or prepare an answer for the next meeting. In case of absence of such committee, the question to be sent to him by the Secretary.

3. To answer the questions in writing, in a condensed form, for preservation.

It was voted that the request be continued to the next meeting.

President Williams, for the Committee on Quarters, announced that arrangements had been made with the manager of the Permanent Exhibit of Building Materials for quarters in their apartments on very favorable terms, and that the effects of the Society had been transferred thither.

The Secretary read a letter from the Secretary of the Liverpool Engineering Society in regard to exchange of transactions.

After an interesting discussion on Dredging the meeting adjourned.

Engineers' Club of Philadelphia.

A special business meeting was held at the rooms in Philadelphia, April 18, Past President Rudolph Hering in the chair; 34 members and 4 visitors present.

The following resolution, offered by Prof. L. M. Haupt, was unanimously adopted: "That a committee be appointed to draft a memorial to the Legislature in behalf of the proposed topographical survey of this state, and to report at the next meeting." The chair subsequently appointed, as this committee, Prof. L. M. Haupt, Chairman, Messrs. C. E. Billin, T. M. Cleemann, Frederic Graff and President J. J. de Kinder.

The following committee was appointed to prepare a memorial for publication in the Proceedings of the late Col. James Worrall, member of the club: Messrs. J. Simpson Africa, Chairman, L. M. Haupt and A. E. Lehman.

A handsome framed engraving of the old Wernwag Bridge was presented to the Club by Percy T. Osborne, accompanied by the following letter to the Secretary:

"I take pleasure in presenting to the Club, in behalf of my father, Rich. D. Osborne, C. E., of this city, an engraving of Wernwag's Bridge, which he obtained in London years ago.

"The structure was designed and built by Louis Wernwag across the Schuylkill River at Fairmount. The corner-stone was laid with Masonic ceremonies, April 28, 1812. It was preceded by, first, a ferry, and then a floating bridge, which was twice swept away by floods, in 1789 and 1810.

"The Legislature chartered a company with a capital of $40,000, to build the Wernwag Bridge, and to hold it for 25 years. It was a wooden structure, with the bottom member arched—340 ft. span, 20 ft. rise. There were 5 trusses. The span was 98 ft. greater than any other in the world at that time. Each truss was an open-built beam, formed of a bottom curved solid-built beam and of a single top beam, which were connected by radial pieces, diagonal braces and inclined iron stays. The bottom curved beam was composed of three concentric solid-built beams slightly separated from each other, each of which had 7 courses of curved scantling in it, each course 6 in. thick by 13 in. in breadth; the courses as well as the concentric beams being firmly united by iron bolts, etc. A roadway that rested upon bottom curved ribs was left on each side of the centre truss, and a foot-path between each of the two exterior trusses.

"The bridge was covered in by a roof and sheathing on the sides. Iron stays anchored the ends of the trusses to the abutments. On Sept. 1, 1838, a fire, supposed to have been of incendiary origin, destroyed this bridge, and no attempt was made to rebuild until 1839, when the city of Philadelphia appropriated $13,000 toward purchasing the rights, and the County Commissioners contracted with Charles Ellet, Jr., to to erect a wire suspension bridge of his own design. This bridge, of 342 ft. span, was opened Jan. 1, 1842, and stood unimpaired for 30 years.

"In 1874, the present double-decked iron bridge, designed by the Chief Engineer of the city, was built by the Keystone Bridge Co., of Pittsburgh."

Mr. James F. Wood described the Sewerage Work now in progress at Atlantic City, N. J. The sewers will drain into a well and the sewerage is expected to be pumped out and carried over the marsh, somewhere, and utilized.

Mr. Jones Wister presented a description of the Beaumont Rock Drill, which is said to bore a 7 ft. 2 in. hole at the rate of from 42 to 120 ft. per week; to be suited to all rocks, but the very hardest; and to avoid the leakage and foul air incident to the use of dyamite. The workings of the drill were discussed by several members. Mr. John Fernie, M. Inst. C. E., who was present as the guest of the Club, at the request of the Secretary, described the character of the rock formation in which this drill had been used.

The Secretary presented a specimen of the work done by the Air Brush, which works upon the general principle of the atomizer, and by which shade effects on drawings are rapidly and permanently effected.

The balance of the evening was occupied in the continuation of the discussion of the condition of Chestnut Street Bridge, Philadelphia. It was opened by Dr. H. M. Chance, who gave the result of his examinations of the displacement of the railing, and was participated in by a number of members, but it appeared that no change of previously expressed opinions had taken place.

Engineers' Club of St. Louis.

The Club met in St. Louis on April 15 and was called to order by President Moore; 24 members present.

The Executive Committee reported a letter from C. W. Bullen, Chairman of House Committee of Mercantile Club, in regard to the use of their rooms.

On motion of Col. Moore the Club expressed their thanks to the Mercantile Club for the use of their rooms for the past year.

Moved by Mr. Ockerson, that the Club hold their meetings at Washington University. This motion was laid over until next meeting.

Mr. H. W. Baker read a paper on "Steamboat Shafts." The paper limited itself to the discussion of the shafts upon stern-wheel towboats, which are the troublesome ones in regard to breakages, and by the analysis of quite numerous examples of these as found in present use, and also of those which have broken down in service, showed the causes of failure to lie mainly in the insufficient sizes of shafts used and the uncertainty of obtaining a good uniform quality of material in large solid forgings.

The subject of hollow shafts was discussed at some length, and it was shown that with the same weight of shaft now used, a hollow shaft could be constructed that would be several times as strong as the solid shaft, and that with a saving of one-third in weight there would be a gain of 50 per cent. in strength.

For a cheap hollow shaft a cast shaft was recommended, and letters from prominent steel founders both in this country and England were read showing the entire feasibility of their construction.

For a better, but more expensive shaft, was recommended one made of a well-worked, high-grade steel, forged by pressure on a mandrel, as is done with those of large ocean steamships, and whose immense superiority was clearly shown.

A general discussion followed and the Club then adjourned.

A Smoke Burning Engine.

Last Friday, engine No. 11, the smoke burner of the St. Louis & San Francisco Railway, with a special train consisting of a coach and baggage car, made a trial trip from Springfield to Newburg, a distance of 125 miles. The principal officers of the road, who occupied the coach, pronounced the engine a thorough success. The engine was forced up the Sleeper hill as fast as possible, with 120 pounds pressure and an open throttle; steam escaping from the "pop" all the way up the hill. About three-quarters of a ton of coal was consumed during the entire trip one way. On the return trip, going up Dixon hill with a grade of 106 ft. to the mile, with sharp curves, the rate of speed of the engine was as high as 40 miles an hour, with enough steam blowing off to run another engine. The fireman put 12 shovelfuls of coal into the fire-box of the engine while it was going up Dixon hill, a distance of 11 miles. There was scarcely any smoke or cinders to annoy the passengers at any time, and no gas or sulphur was noticeable in the exhaust steam. No skill is required to fire the engine, as the feed-door is always kept partly open.—*St. Louis Republican, April* 21.

Clean Ballast.

The Paris, Lyons & Mediterranean, the greatest of the six great railroad companies of France, has decided that hereafter all its ballast must be screened and completely freed from earthy particles, which is expected to be costly, but to prove profitable because of the better drainage.

Long Spans of Telegraph Wire.

The French authorities in Cochin China have erected overhead wires across the river Mekong, posts 165 ft. high having been put up on each side of the river, at a spot where the width is 2,560 ft., and from these silicious bronze wires—one .04 in., and the other .055 in. in diameter—are suspended across the stream. Over a tributary of the river another similar connection has been made, 1,670 ft. span and more than 114 ft. above flood water. The former of these is a span of 0.46 of a mile.—*Engineer.*

The Hudson River was formerly spanned by telegraph wires, which were suspended from masts placed at Fort

Washington and Fort Lee, on opposite sides of the river, just at the lower end of the Palisades. The span must have been considerably greater than that given above. The wires were abandoned for cables under the river.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings of the stockholders of railroad companies will be held as follows:

Atlantic & Pacific, annual meeting, at the office in Boston, May 21.

Central, of New Jersey, annual meeting, at the office in Jersey City, May 8, at noon.

Chicago & Northwestern, annual meeting, at the office in Chicago, June 4. Transfer books close May 2.

Delaware & Hudson Canal Co., annual meeting, at the office in New York, May 12.

Lake Shore & Michigan Southern, annual meeting, at the office in Cleveland, O., May 6.

Michigan Central, annual meeting, at the office in Detroit, Mich., May 7.

Missouri, Kansas & Texas, annual meeting, at the office in Parsons, Kan., May 20, at noon.

New York, Chicago & St. Louis, annual meeting, at the office in Cleveland, O., May 6.

New York, Susquehanna & Western, annual meeting, at Taylor's Hotel, in Jersey City, May 7, at noon.

Norfolk & Western, annual meeting, at the office in Norfolk, Va., May 6.

St. Louis, Alton & Terre Haute, annual meeting, at the office in St. Louis, at 2:30 p. m. on June 1.

Vicksburg & Meridian, annual meeting, at the office, No. 51 William street, New York, May 4, at noon.

Dividends.

Dividends on the capital stocks of railroad companies have been declared as follows:

Boston & Maine, 4 per cent., semi-annual, payable May 15, to stockholders of record on April 23.

Manchester & Lawrence, 5 per cent., semi-annual, payable May 1.

Nashua & Lowell (leased to Boston & Lowell), 3½ per cent., semi-annual, payable May 1.

Northern (New Hampshire), 7 per cent., extra dividend from the surplus fund, payable May 1.

Railroad and Technical Conventions.

Meetings and conventions of railroad associations and technical societies will be held as follows:

The *American Association of Train Dispatchers* will hold its annual convention in Denver, Col., on Wednesday, June 3.

The *Master Car-Builders' Association* will hold its annual convention at the Hygeia Hotel, Old Point Comfort (Fortress Monroe), Va., beginning on Tuesday, June 9.

The *Master Mechanics' Association* will hold its annual convention in Washington, beginning on Tuesday, June 16.

The *Car Accountants' Association* will hold its annual convention in Minneapolis, Minn., beginning on Tuesday, June 23.

The *General Baggage Agents' Association* will hold its half-yearly meeting in St. Paul, Minn., on Wednesday, July 15.

The National Association of General Passenger & Ticket Agents will hold its next half-yearly meeting in New York, at 11 a. m., on Tuesday, Sept. 15.

Foreclosure Sales.

The sale of the *Brooklyn, Bath & Coney Island* road, under the decree of foreclosure granted by the New York Supreme Court, has been postponed until May 4, at the City Hall in Brooklyn.

Trunk Line Presidents' Meeting.

A meeting of the trunk line presidents was held at the Commissioner's office in New York, April 28, all the lines being represented. There was a general discussion of the situation, especially with reference to the formation of the New Central Traffic Association, but no action of any kind was taken. The meeting still continues, but up to date its conclusions have not been made public.

ELECTIONS AND APPOINTMENTS.

Baltimore & Ohio.—Mr. C. S. Wight has been appointed Assistant General Freight Agent, with office in Pittsburgh, and will have general charge of the company's freight business in that section.

Boston & Albany.—Mr. A. L. Soule has been chosen a director in place of John C. Phillips, deceased.

Cairo, Vincennes & Chicago.—Messrs. Anthony J. Thomas and Charles E. Tracy have been appointed Receivers of the Cairo Division of the Wabash, which will hereafter be operated under this name.

Canadian Pacific.—Mr. George M. Bosworth is appointed Assistant Freight Traffic Manager for all this company's lines in Ontario and Quebec east of Port Arthur, and will have general charge of the freight traffic of these lines, with office at Montreal.

Mr. E. Tiffin, General Freight Agent of the Ontario Division, with office at Toronto, will have special charge of the freight traffic of the lines west of Smith's Falls.

Central Pacific.—At the annual meeting in San Francisco recently, the following directors were chosen: Leland Stanford, C. P. Huntington, Charles Crocker, Charles F. Crocker, Timothy Hopkins, W. V. Huntington and E. H. Miller, Jr. The board organized by the election of Leland Stanford, President; C. P. Huntington, First Vice-President; Charles Crocker, Second Vice-President; T. Hopkins, Treasurer, and E. H. Miller, Jr., Secretary.

Chicago Burlington & Quincy.—Mr. T. J. Potter, heretofore First Vice-President and General Manager, will hereafter be First Vice-President only, being relieved from the duties of the General Manager's office. Mr. H. B. Stone, late Assistant General Manager, has been appointed General Manager of all lines owned and operated by the company east of the Missouri River, with headquarters in Chicago.

Mr. G. W. Holdrege, heretofore Assistant General Manager, has been appointed General Manager of the Burlington & Missouri River road, including all lines operated by the company west of the Missouri. His office will be at Omaha.

Mr. James S. Bartle has been appointed Third Assistant General Freight Agent, with office in Chicago.

At the annual meeting in Chicago, April 29, the old directors were all re-elected, without change.

Chicago & Eastern Illinois.—The following circular has been issued by General Superintendent O. S. Lyford: "The office of the Traffic Manager of this company having been made vacant by the death of Col. Robert Forsyth, that office is hereby abolished. Mr. Frank V. Davis is appointed General Freight Agent."

Chicago & Indiana.—The directors of this new company are Wm. Foster, Frederick Hoover, James Murdock, Isaac D. Dunn, Thomas Hanlon, Robert K. Abbott and John D. Foresman.

Chicago & Northwestern.—Mr. W. A. Scott is appointed Assistant Superintendent of Motive Power and Machinery. Mr. Wm. Smith (late General Foreman Chicago shops) succeeds Mr. Scott as Master Mechanic of the Winona & St. Peter Division.

Cincinnati, New Orleans & Texas Pacific.—The following circular has been issued by General Manager John Scott: "Mr. R. F. Munro having resigned the position of Comptroller, Mr. C. C. Harvey, Assistant General Manager, is hereby appointed Comptroller, dating on and from April 20, at which date the position of Assistant General Manager will be abolished."

Cleveland, Columbus, Cincinnati & Indianapolis.—The following circular from General Manager E. B. Thomas, is dated Cleveland, O., April 21:

"Mr. Edgar Hill is appointed General Freight Agent of the Indianapolis & St. Louis Railway, with office at Cleveland, vice Mr. Henry W. Gays, resigned. Mr. M. S. Wasson is appointed Assistant General Freight Agent of the Indianapolis & St. Louis Railway, with office at St. Louis. These appointments take effect on May 1."

Delaware, Lackawanna & Western.—Mr. W. B. Pierce has been appointed Trainmaster of the Cayuga Division. The office of Superintendent is abolished.

Des Moines, Osceola & Southern.—The following appointments have been announced by Receiver Mason: James Donahue, Superintendent and General Freight Agent, Des Moines, Ia.; H. N. Trow, Roadmaster, Osceola, Ia.; William Persing, Master Mechanic, Osceola, Iowa.

Elizabethtown, Lexington & Big Sandy.—At the annual meeting in Lexington, Ky., April 16, the old board was re-elected as follows: A. T. Reed, Frank H. Davis, Isaac E. Gates, Jas. P. Lloyd, W. A. Crossman, New York; John Echols, Staunton, Va.; Geo. O. Graves, Joseph S. Woolfolk, Lexington, Ky.; James Thorn, Mount Sterling, Ky. The board elected as officers: President, A. T. Reed; Vice-President, John Echols; Treasurer, Isaac E. Gates; Secretary, W. C. Emery; General Manager, C. W. Smith.

Durham & Clarksville.—This company has been organized at Blue Wing, N. C., with the following officers: A. W. Graham, President; D. Merritt, Vice-President; Rufus Amis, Secretary; D. A. Long, Treasurer.

Lake Erie & Western.—Mr. J. H. Cheney (Vice-President of the company) has been appointed Receiver.

Louisville, New Orleans & Texas.—Mr. John Bradley has been appointed Assistant Superintendent of the main line and branches, with headquarters in New Orleans.

Mexican Central.—The headquarters of General Manager D. B. Robinson have been removed from the City of Mexico to El Paso del Norte.

Minnesota Railroad Commission.—The Commissioners, J. H. Baker, S. S. Murdock and George L. Becker, met in St. Paul April 15, and organized by electing Mr. Baker Chairman of the board. Mr. E. E. Warner was chosen Chief Clerk.

New York Central & Hudson River.—Mr. G. B. Overpaugh has been appointed Roadmaster of the Eastern Division, in place of Isaac Minnie, resigned.

New York, Lake Erie & Western.—The following order from the President is dated April 27:

"On and after May 4 the freight transportation interests of this company west of Buffalo and Salamanca, including the east-bound through freight traffic, will be represented by a Freight Traffic Manager, with headquarters at Chicago, who will have charge of the relations of this company through its fast freight lines, and otherwise with all its connections west of the trunk lines. The Freight Traffic Manager at New York will have similar charge of all business east of Buffalo and Salamanca, including the west-bound through freight traffic. Under this order Mr. G. H. Vaillant is appointed Freight Traffic Manager at Chicago, Mr. R. C. Vilas continuing as Freight Traffic Manager at New York. These officials will report to and receive their instructions from the Vice-President in charge of traffic."

Northern Pacific Terminal Co.—Mr. J. W. Johnson, of Portland, Or., is appointed Chief Engineer in place of F. W. Gilbert, made Division Superintendent on the Northern Pacific road.

Pensacola & Memphis.—The office is in Pensacola, Fla. The officers are: L. H. Sellars, President; S. S. Harvey, Vice-President; S. N. Van Praag, Secretary; S. C. Cobb, Treasurer.

Pittsburg & Northeastern.—Mr. J. H. Connor, of Pittsburg, Pa., is President of this new company.

Southern Pacific Co.—The directors and officers of the company, elected at a stockholders' meeting held at Louisville, April 8, 1885, are as follows: Directors, Leland Stanford, Timothy Hopkins, E. H. Miller, Jr., F. S. Douty, W. E. Brown, C. P. Huntington, Charles Crocker, T. W. Peirce, S. T. Gage, Ariel Lathrop and Charles F. Crocker. Leland Stanford, President; C. P. Huntington, First Vice-President; Chas. Crocker, Second Vice-President; Charles F. Crocker, Third Vice-President; Timothy Hopkins, Treasurer; E. H. Miller, Jr., Secretary.

Staten Island Rapid Transit Co.—At the annual meeting in New York, April 28, the following directors were elected: J. Frank Emmons, James M. Davis, E. Norton, A. B. Boardman, Frederick White, George F. Kreischer, R. M. Gallaway, I. K. Martin, Theodore E. Leeds, W. H. Pendleton, H. Holton Wood, J. Harcourt Bull and William Kentgen.

Thorn Creek.—Mr. W. C. Mobley, of Parker, Pa., is President of this new company.

Wilmington & Northern.—Mr. John T. Gay, of Coatesville, Pa., is appointed Roadmaster.

Worcester, Nashua & Rochester.—Mr. C. S. Turner, heretofore President and General Manager, has been relieved of the duties of the last-named office. Mr. P. E. Hall has been chosen General Manager in his place. Mr. Hall is now Superintendent of the Sioux City & Pacific road.

PERSONAL.

—Mr. Isaac Minnie has resigned his position as Roadmaster of the Western Division of the New York Central & Hudson River road.

—Mr. Edward W. Jordan, lately Superintendent of the Buffalo Division of the Rochester & Pittsburgh road, will leave Buffalo shortly to accept a position on the Chicago, Milwaukee & St. Paul.

Mr. George H. Vaillant has resigned his position as General Freight Agent of the Lake Shore & Michigan Southern, and will, it is understood, accept an important position in the freight department of the New York, Lake Erie & Western road.

—Mr. William R. Humphrey, Superintendent of the Cayuga Division of the Delaware, Lackawanna & Western Railroad, has tendered his resignation, to take effect May 1. Mr. Humphrey is one of the oldest railroad superintendents in the United States. He has held the Cayuga Division superintendency continuously for over 35 years, and only retires on account of failing eyesight.

—Mr. George Dingley, one of the oldest foremen at the London & Northwestern Works at Crewe, and a familiar figure to most American visitors, is dead. Joining the line when it possessed but 26 engines, he lived to see that number increased nearly one hundred fold. The present Superintendent of Motive Power, Mr. F. W. Webb, served his apprenticeship in Mr. Dingley's shop.

—Mr. Conrad N. Jordan, who has been appointed Treasurer of the United States, was for three years Treasurer of the New York, Ontario & Western Co. He was also a director in that company and several other railroad organizations, having been for several years closely associated with ex-Governor Tilden, and representing him in the organizations in which he was interested.

—It is again reported that Mr. C. B. Meeker has resigned his position as General Passenger Agent of the New York Central & Hudson River road on account of his continued ill health. It is also reported that the position has been offered to Mr. D. M. Kendrick, now General Passenger Agent of the Delaware & Hudson Canal Co. Mr. Kendrick was at one time connected with the road and was afterwards General Passenger Agent of the Indianapolis & St. Louis.

TRAFFIC AND EARNINGS.

Railroad Earnings.

Earnings of railroad lines for various periods are reported as follows:

	1885	1884.	Inc. or Dec.	P.c.
Three months ending March 31:				
Gulf, Col. & S. F.	$276,879	$385.049	D. $108,170	28.1
Mem. & Charles.	351,765	335,816	I. 15,949	4.7
Minn. & St. L ...	447,946	379,426	I. 68.520	18.0
N.Y.& N.England	720,451	755,120	D. 34,669	4.6
Net earnings...	221,942	109,192	I. 112,750	103.4
N. Y., Sus. & W.	230,268	199,899	I. 30,369	15.2
Norfolk & West..	645,952	648,675	D. 2,723	0.4
Net earnings...	261,438	247,595	I. 13,843	5.6
Northern Cent...	1,276,625	1,271,023	I. 5,602	0.4
Net earnings...	532,956	438,601	I. 94,375	21.5
Phila. & Reading.	5,560,513	6,386,286	D. 825,773	12.8
Net earnings...	1,870,930	2,115,833	D. 244,903	11.6
West Jersey	209,468	218,978	D. 9,510	4.3
Net earnings...	62,085	82,352	D. 20,267	24.7
Month of March:				
Ft. Worth & D..	$32,539	$31,532	I. $1,007	3.2
Net earnings...	14,602	9,682	I. 4,920	50.7
Gulf, Col. & S. F.	95,445	121,676	D. 26.231	21.5
Mem. & Charles.	109,252	111,925	D. 2,673	2.4
Net earnings...	11,572	23,463	D. 11,891	50.6
Minn. & St. L....	190,432	143,233	I. 47,199	33.0
N.Y.& N.England	263,934	259,471	I. 4,463	1.7
Net earnings...	98,635	52,015	I. 46,620	89.5
N. Y., Sus. & W..	91,098	71,704	I. 19.394	27.0
Norfolk & West..	219,321	210,298	I. 9.023	4.3
Net earnings...	85,076	76,215	I. 8,861	12.0
Northern Cent...	483,300	462,504	I. 20,796	4.5
Net earnings...	228,405	182,133	I. 46,272	25.4
Phila. & Reading.	1,919,502	2,188,144	D. 268,642	12.3
Net earnings...	627,263	718,075	D. 90,812	12.6
West Jersey.....	82,493	82,492	D. 89	0.1
Net earnings...	30,134	31,747	I. 4,387	13.7
Third week in April:				
Bur., C. R. & No.	$54,398	$48,438	I. $5,900	12 4
Canadian Pacific.	172,000	74,000	I. 98 000	132.4
Chi. & Alton	157 199	164,027	D. 6,828	4 2
Chi. & East. Ill..	31.964	29,575	I. 2.389	7.4
Chi., Mil. & St. P.	407.000	433,967	D. 26,967	6.2
Chi. & Nor'west.	415,900	391,700	I. 24,200	6.2
Chi., St. P., M. & O.	99,000	128,300	D. 29,300	22.9
Chi. & W. Mich..	26,814	30,560	D. 3,746	12.2
Cin., Ind., St. L. & Chi	45,761	45,705	I. 56	0.1
Illinois Central...	200.000	197,108	I. 2,892	1.5
Iowa lines	31.500	33 171	D. 1,675	5.0
Long Island.....	52,603	47.117	I. 6,486	13.8
Louisv. & Nash..	297,515	253.300	I. 14,215	5.6
Mil.. L. S. & W.	26,400	21.525	I. 4,875	22.7
Mil & Northern..	11.019	10,462	I. 557	5.3
Roch. & Pitts....	21,395	18,938	I. 2,457	13.0
St. L. & San F...	79,900	79.900	D. 600	0.8

Weekly earnings are usually estimated in part, and are subject to correction by later statements. The same remark applies to early statements of monthly earnings.

Coal.

Coal tonnages are reported for the week ending April 18 as follows:

	1885.	1884.	Inc. or Dec.	P. c.
Anthracite	627,261	61,353	I. 565.908	922 4
Eastern bituminous.....	184.609	170 496	I. 14.113	8.3
Coke.....	50,097	55,935	I. 3,162	5.6

The week was in 1884 one of total stoppage of mining, which accounts for the great increase shown this year. The anthracite market is fairly active, but prices are reported low, with a good deal of competition for orders. Coke shipments show an increase for the first time in many weeks.

Pennsylvania Railroad coal tonnage for the week ending April 18 was:

	Coal.	Coke.	Total.	1884.
Line of road	149,406	57,979	207 385	170,393
From other lines.....	82,752	1,118	83,870	77,440
Total.....	232,158	59.097	291,255	247,833
Year to April 18.....	3,060,479	732,073	3,792,552	3,823,449

Increase for the week, 43,422 tons, or 17.5 per cent.; decrease for the year, 30,897 tons, or 0.8 per cent.

Cumberland coal shipments for the week ending April 18 were 66,703 tons. Total to April 18 this year, 658,088; last year, 633,102; increase, 24,986 tons, or 3.9 per cent.

The coal tonnage of the Chesapeake & Ohio Railroad for the three months ending March 31 was:

	1885.	1884.	Increase.	P.c.
Coal.....	275.114	217.333	57,781	26.6
Coke.....	27,761	14,550	13,211	90.8
Total	302,875	231,883	70,992	30.6

The chief increase was in splint and block and in gas coals.

Cumberland coal shipments for the week ending April 25 were 76,083 tons. Total to April 25 this year, 734,171; last year, 693,545; increase, 40,626 tons, or 5.8 per cent.

New Passenger Lines.

Arrangements have been made for a passenger line between Cincinnati and Peoria, Ill., with through cars, over the Cincinnati, Hamilton & Dayton, Cincinnati to Indianapolis; the Indianapolis, Decatur & Springfield, Indianapolis to Decatur; and the Peoria, Decatur & Evansville, Decatur to Peoria. Through trains will begin running about May 10.

In connection with this line a through car will also be run between Columbus, O., and Peoria, over the above roads west of Indianapolis, and the Chicago, St. Louis & Pittsburgh between that city and Columbus.

Cotton.

Cotton movement for the week ending April 24 is reported as follows, in bales:

Interior markets:	1885.	1884.	Inc. or Dec.	P. c.
Receipts	8,676	23,912	D. 15,836	66.0
Shipments	18,916	32,078	D. 13,162	41.1
Stock, April 24	106,983	90,794	I. 16,189	17.5
Seaports:				
Receipts	19,122	20,923	D. 1,801	8.6
Exports	46,519	36,207	I. 10,312	2 8
Stock, April 24	575,357	572,785	I. 2,572	0.4

The total movement from plantations for the crop year (from Sept. 1) to April 24 is estimated at 5,506,890 bales; the increase, as compared with last year, is 9,658 bales, the decrease from 1882-83 is 1,090,664 bales, and the increase over 1881-82 is 378,264 bales.

New York State Canals.

The Superintendent of Public Works gives notice that the New York state canals will be opened for navigation May 11. The repairs begun some time ago at different points on the canals have been so far completed that navigation will be in nowise delayed.

Boston Traffic Notes.

The railroad clearing house reports loaded cars coming into New England at all points, during the month of March, 1885, as compared with March, 1884, as follows: March, 1885, 40,543; March, 1884, 32,820; increase, 7,733, or 23.6 per cent.

Transportation of "Rackarock."

The Superintendent of Transportation of the Pennsylvania Railroad has given orders that "Rackarock" powder may be shipped at any time as merchandise, and not subject to the conditions under which high explosives are shipped. This is due to the fact that this explosive consists of two ingredients, a solid and a liquid, which are kept separate and have no explosive qualities until combined—which is done at the time of using.

Western Freight Rates.

The cutting of rates on business between Chicago and Council Bluffs has continued, and at latest date the tariff rate between those points was 10 cents per 100 lbs. on all classes. The cutting is in both directions and all the lines join in it.

At first the trouble was confined to the Chicago and Council Bluffs business, but last week it was extended to St. Paul traffic, and rates have been made by the Milwaukee & St. Paul and the Rock Island of 10 cents on all classes from Chicago to St. Paul and 5 cents to Rock Island, Davenport and other Mississippi River points. Here also all the lines have taken part in the cutting; although the Northwestern has refused to adopt the 10 cent rate made by the other lines. There appears to be no present prospect of a settlement of the trouble.

Petroleum.

The production and shipments of the Pennsylvania and New York oil wells for March are given by *Stowell's Petroleum Reporter* as follows in barrels of 42 gallons:

	1885.	1884	Inc. or Dec.	P. c
Production	1,638,133	2,052,417	D. 414,284	20.2
Shipments	1 887,034	1,873,890	I. 13,144	0.7
Stock, March 31	36,508,236	36,202,262	I. 305,974	0.8
Producing wells	22,042	21,000	I. 1,042	5.0

Of the total production the Alleghany District furnished 13.1 per cent.; the Bradford District 42.8; the Warren District 11.0, and the Lower District 33.1 per cent.

The shipments for the month exceeded the production by 248,901 barrels, and the stock on hand was reduced by that amount during the month.

Shipments for the month were as follows, in barrels:

	Crude.	Refined.	Total.	P. c.
New York	610 351	46,240	656,591	34.8
Philadelphia	341,420	14,550	355,970	18.8
Baltimore	184,618	1,428	186,046	9.9
Boston	21,448	45,647	67,095	3.6
Cleveland	265,681	... .	265,681	14.1
Pittsburgh	85,936	.....	85 936	4.5
Local points	231,156	38,559	269,715	14.3
Refined at Creek refineries	146,424	.....	.....	...
Total	1,887,034	146,424	1,887,034	100.0

In this table the refined oil is reduced to its equivalent in crude, so that the total represents the amount of crude oil shipped to each point, whether in crude or refined form.

Chicago, St. Louis & Missouri River Passenger Association.

At a meeting of this Association in Chicago, last week, resolutions were adopted requesting the Arbitrator to prepare some plan concerning the transportation of jewelers' sample trunks and other valuable baggage of a similar character, and tosubmit the same to the next meeting of the Association.

The following was also adopted:

"*Resolved*, That the passenger business through St. Paul to points west of and including Oregon Short Line Junction be put upon the same basis as the rates through Council Bluffs and Kansas City by the Chicago, St. Louis & Missouri River Passenger Association managers' agreement, and that the general managers be requested to ratify this agreement and put the same into effect as soon as may be."

Central Passenger Committee.

The meeting of the Central Passenger Committee in Cincinnati last week continued for three days. The resolutions adopted as below show the conclusions reached:

"*Resolved*, That the right to make through rates between common points shall be accorded to the company or companies having the shortest line between said points. When a water route forms part of such line and is in competition with a rail line, then the rail line shall be adopted in making through rates. Such through rates shall not exceed the sum of locals of any rail line between such points.

"*Resolved*, That one-way second-class rates may be made 10 per cent. less than first-class rates and round trip rates shall not be made lower than 20 per cent. less than double first-class, provided that should the minimum herein agreed upon seriously disturb existing second-class local rates the roads therein interested shall agree upon a basis and submit it to this committee for approval.

"*Resolved*, That no more second-class rates be named in the rate sheet without first obtaining the consent of this association.

"*Resolved*, That the operation of the penal rule regarding rate cutting be suspended at points where it is impracticable to enforce it on account of the non-concurrence of any line, and that parties interested notify the Chairman of such points, without delay, for the information of the committee.

"*Resolved*, That all excursion business of a purely local, non-competitive character may be arranged by the several lines without reference to the committee, subject, however, to rules which may be in force in the local committees.

"*Resolved*, That no commission or compensation of any kind shall in any manner be paid to any person other than a regularly appointed agent of a railroad company, for whose action such railroad company is responsible.

"*Resolved*, That each case not already provided for which may arise, wherein members of the committee are unable to agree, and which affects the general policy of the committee, shall be submitted to a special committee of arbitration, consisting of three persons, of which the Chairman of the Central Passenger Committee shall be one, and *ex-officio* Chairman, the other two members of such special committee of arbitration shall be agreed upon by the parties in interest; or failing on an agreement, they shall be appointed by the Chairman. The decision of such board of arbitration shal be the rule of the committee for not less than 90 days from the date of submission to arbitration."

Compiler W. H. King was authorized to locate his office in Cincinnati. The published rate-sheets now in effect were declared the official rates of this committee; provided that business from all the territory of the Central Passenger Committee to the sea-board, from all points in Western Pennsylvania and from points on lines between Cleveland & Chicago, St. Louis and points beyond, in competition with the New York, Chicago and St. Louis Railroad, be temporarily suspended from the operation of the rule. The next meeting will be held at Cleveland, May 12.

Southern Railway & Steamship Association.

The following circular letter from General Commissioner Virgil Powers is dated Atlanta, Ga., April 20:

"The Executive Committee of the Southern Railway & Steamship Association, at its meeting in New York, April 1, 1885, passed the following resolution:

"'*Resolved*, That a line from Buffalo, through Pittsburgh, Wheeling and Parkersburg, to Huntington, be made the dividing line between the eastern and western lines for territory hereafter outlined.

"'That the western lines will not take business from points east of that line for any points east of a line drawn from Chattanooga through Birmingham and Montgomery to Pensacola.

"'The eastern lines, including the Richmond & Danville Railroad *via* Strasburg or points east of Strasburg, and the East Tennessee, Virginia & Georgia Railroad *via* Bristol, not to take business from points west of that line (Buffalo, etc.) to any points on or west of a line drawn from Chattanooga through Athens, Augusta and Macon to Live Oak.

"'The business from Buffalo, Pittsburgh, Wheeling, Parkersburg and Huntington, to and east of Chattanooga, Calera and Selma, to be worked at agreed rates, and that the business of those be pooled—50 per cent. to eastern lines and 50 per cent. to western lines.

"'In case eastern lines take western business, or western lines take eastern business, they pay into the pool the entire revenue accruing thereon from points of junction with the Association roads, to be given to the lines composing the eastern or western lines, as the case may be.'

"This resolution requires the division between the lines composing the Southern Railway & Steamship Association, after that business reaches those lines, of all business from Buffalo, Pittsburgh, Wheeling, Parkersburg and Huntington, to Chattanooga, Birmingham, Calera, Selma, Montgomery and Pensacola, and points east thereof, to and including points on a line drawn from Chattanooga, through Athens, Augusta, Macon and Live Oak.

"The revenue accruing on this business, based on rates agreed upon, will be divided—50 per cent. to eastern and 50 per cent. to western lines, under the rules of the Association.

"Eastern lines are requested to report to this office, in addition to the interior and port business now reported, all business done from Buffalo, Pittsburgh, etc., to points in the territory within the lines designated in the resolution, viz.: between and including points on the line from Chattanooga through Athens, Augusta and Macon to Live Oak, on eastern side, and the line from Chattanooga through Birmingham, Calera, Selma and Montgomery, to Pensacola, to be divided between lines doing the business, on basis of agreement as to eastern interior business, as well as to divide with the western lines on the basis of 50 per cent. to each eastern and western line.

"Eastern lines are directed, in accordance with this resolution, to discontinue taking business west of this line from Buffalo, Pittsburgh, etc., to points on or south and west of Chattanooga, Athens, Augusta, Macon and Live Oak. Should any of this business be taken, it must be reported to this office.

"Western lines are requested to report all business taken from Buffalo, Pittsburgh, etc., to the territory between a line through Chattanooga, Birmingham, Calera, Selma, Montgomery and Pensacola, and the line from Chattanooga through Athens, Augusta and Macon to Live Oak, to be divided with eastern lines—50 per cent. to each.

"Western lines are requested also to discontinue taking business from points east of the line from Buffalo, etc., to the territory east of Chattanooga, Birmingham, Calera, Selma and Montgomery. Should they take any such business, it should be reported to this office, to be dealt with according to the resolution.

"I suggest the following rates from Buffalo, Pittsburgh, etc., to all points south controlled by the Southern Railway & Steamship Association. [A table of proposed rates is here given in the letter, the rates from points named to Atlanta being, in cents per 100 lbs.: 1st, 113; 2d, 97; 3d, 87; 4th, 71; 5th, 58; 6th, 50; A, 36; B, 51; C, 41; D, 37; E, 63; F (per bbl.), 74; G (per bbl.), 116; H. 68; special, 33.]

"Members of the Rate Committee will please advise me fully of their views on these proposed rates, and, if all approve, I will issue circular putting them into effect.

"I strongly urge upon members of the Association connected with the Trunk Lines, that they recommend in the strongest terms possible to the Trunk Lines the division of this business from initial points, Buffalo, Pittsburg, Wheeling, etc., as the surest means for the protection and maintenance of rates."

RAILROAD LAW.

Rates on Inter-State Traffic.

The South Carolina Supreme Court, in the case of the Charlotte, Columbia & Augusta Co., has confirmed the decision of the lower court, to the effect that the Railroad Commission of the state has no power to regulate the rates on any freight shipped from points in the state to points in other states. The Commission claimed the right to regulate rates on such shipments.

Highway Grade Crossings in Massachusetts.

The following act has been passed by the Massachusetts Legislature "to protect travelers at grade crossings of highways and railroads":

SECTION 1. Upon complaint and application made to the Board of Railroad Commissioners, according to the provisions of section 17 of chapter 112 of the Public Statutes, stating that any level crossing of a railroad with a highway, townway or street is improperly occupied by a railroad company with its freight engines, freight cars or freight trains to the unreasonable inconvenience or danger of the public, said Board shall, after due notice, hear the parties; and if it appears that the allegations of the complaint are true, may, if public convenience or safety require, order that, after a date fixed by said Board such railroad company shall not use or occupy such crossing or any part thereof, for making up or disconnecting freight trains, or for connecting or disconnecting the engines or cars of such trains, or for the purpose of distributing freight or freight cars; and may prescribe and direct such changes to be made in the construction of side tracks, branches and connections, in proximity to such crossings, as will prevent the use of such crossings in the manner aforesaid, in connection with such side tracks, branches or connections; or may prescribe such regulations limiting the use of such crossings for such purposes as may appear to be necessary, and may at any time modify its order after a hearing and for cause shown.

SEC. 2. The Supreme Judicial Court, on application of the Attorney-General, may by suitable process in equity compel railroad corporations to comply with any order made under the provisions of this act.

Liability for Death of Employe—Defective Cars.

The Court of Appeals of New York has given a decision in the case of Eilis, administrator, against the New York, Lake Erie & Western Co. The suit was brought to obtain damages for the death of W. F. Ellis, who was a brakeman on the Erie road. In 1881, while at his post on a coal train on the road, the train was run into by another. The bumper of the caboose was higher than the bumper on which Ellis was riding, and consequently the caboose was thrown up on top of the coal car and crushed him to death. His administrator brought suit on the ground that the company was liable, having used improper or imperfect appliances. The case was first tried in the Supreme Court at Special Term, and the plaintiff was non-suited. The General Term sustained this decision, but the Court of Appeals reversed it and sent the case back to the lower courts for trial before a jury. It was tried nearly a year ago, when the jury gave plaintiff a judgment for $3,500, with interest from the date of Ellis' death. The company again took an appeal to the General Term, and finally to the Court of Appeals, which now gives a final decision in favor of the plaintiff and the company will have to pay.

Examinations for Color Blindness in Ohio.

The Railroad Commissioner of Ohio has notified the railroad companies of that state that the Legislature at its present session has passed a law requiring all railroad employés to be examined for color-blindness by a competent oculist. The law further requires that the employés must be re-examined every second year, and prohibits employment of persons with defective sight. The penalty is a fine of $100 for each violation. The Commissioner notifies the companies that they must at once comply with the law.

Liability for Baggage—Wrongful Detention.

A decision has just been rendered by the New York Court of Appeals in a case which has been in litigation for 18 years, has been tried four times in the Supreme Court, and has been three times before the Court of Appeals. On March 11, 1862, Cyrus W. McCormick applied to the Pennsylvania Railroad Co., at Philadelphia, for the transportation of himself and family to Chicago. He transferred his baggage to the baggage-master and demanded checks for it, but these were refused on the ground that it was above the weight allowed. Mr. McCormick was told that he must pay an extra amount for his baggage before he could have his checks. He refused to do this and demanded the return of his baggage. This was refused on the ground that it could not be moved from the car before the schedule time for starting the train.

The baggage went on to Chicago and Mr. McCormick remained in Philadelphia. The following day he saw the President of the road and secured an order from him for the delivery of his baggage at Pittsburgh, but on his arrival there he found that it had gone on to Chicago. The station of the Pennsylvania road at Chicago was struck by lightning and burned, and with it Mr. McCormick's baggage. The trunks contained costly clothing and diamonds belonging to Mrs. McCormick, and in 1867 Mr. McCormick sued the company in the Supreme Court in New York to recover their value. The claim of his counsel was that the Pennsylvania Co. had wrongfully converted his property and was liable for its full value. The defense claimed that by accepting the order for the delivery of his baggage at Pittsburgh, Mr. McCormick had reassumed control over his property, and that the company in any event was not liable to him for the value of his wife's jewels, which, according to the laws of Illinois, belonged to her personally.

In the decision just rendered by Chief-Justice Ruger, in which all the Judges of the Court of Appeals concur, it is held that the case, as presented by the evidence, shows an original wrongful detention of the plaintiff's property by the defendant, and a defeat, through the negligence or willful misconduct of the defendant and its servants in carrying it beyond the point agreed on for its delivery, of every effort on the part of the plaintiff to regain its possession. The jewelry, it is held, constituted a part of the wife's paraphernalia, the right of property in which, under the common law, was in the husband. The evidence tended to show that the property in question was purchased by the plaintiff and given to his wife on their marriage, in 1858, previous to the passage of any statute in Illinois changing the common law relations as to the ownership of property existing between husband and wife.

The Court of Appeals therefore sustains the judgment of the General Term, giving to the executors of the plaintiff the value of the property destroyed, with interest, which amounts in round numbers to about $18,000.

OLD AND NEW ROADS.

Baltimore & Ohio.—The company has filed its answer in suit begun by a Mr. Ross, to ascertain by what authority funds, which he claims belonged to stockholders, are used for the building of the Baltimore & Ohio Telegraph lines. The answer says, that the defendant company has full authority under its charter to construct telegraph lines and to engage in telegraph business, and that the development of this telegraph business has been of great advantage to the company and its stockholders, and has added largely to the value of the property. It also claims that the charges in the plaintiff's bill, that the officers of the company had entered into the telegraph business for their individual profit, are wholly without foundation in fact, and that no money of the company has been used in any way except for lawful and proper purposes.

Since the construction of the Philadelphia Branch was begun this company has had constant trouble with sub-contractors. Many of these men took small contracts at very low prices, and finding their work unprofitable some of them ran away without going through the formality of paying their men. The latest case is that of a man who was contractor for the mason work of the Gunpowder bridge, and who ran away, leaving a considerable amount due for wages. The laborers thus left in the lurch, seized the superintendent of construction and the clerk, and at latest accounts were holding them as hostages to secure their payment.

Boston, Barre & Gardner.—The directors have voted to call a meeting of the stockholders of the road in Worcester, Mass., May 6, to take action in regard to accepting the terms of the legislative act authorizing consolidation with the Fitchburg road on the basis of 10 shares of the Barre &

Gardner for one of the Fitchburg stock. The towns of Holden, Hubbardston and Gardner, which own blocks of the stock, have recently consented to the consolidation, so the act will be accepted unanimously. The Fitchburg stockholders will vote on the acceptance of the act at a meeting to be held in Boston, May 7.

Boston & Lowell.—The new Billerica Branch of this road is now completed and was to be inspected by the Railroad Commissioners this week. It will be opened probably on May 1. This branch leaves the Concord Branch at Bedford, Mass., 15 miles from Boston, and runs northward to the main line near North Billerica, 19 miles from Boston. It is 9 miles long and completes a loop line from Boston to North Billerica. It is understood that some of the trains between Boston and Lowell will be run by way of the new branch. The new line follows for the most part the line of the Billerica and Bedford road, which was built some years ago (of 2-ft. gauge), and which was afterward abandoned and the track taken up.

The New Hampshire Railroad Commissioners, after investigating a freight train and bridge accident, which occurred April 15 on the White Mountains Division of the Boston & Lowell, have reported that the track was defective, but the company knew it and had ordered it repaired. The train belonged to the Portland & Ogdensburg and was unusually heavy, and the Boston & Lowell had repeatedly notified the management of that road not to run such trains until they had possessed the road long enough to put it in order. The Commissioners steer clear of the legal questions that arise from these facts, and recommend that it "will be unsafe, dangerous and culpable to use any engines as pushers or run passenger trains at a rate of speed greater than 10 miles an hour, or freight trains faster than 8 miles an hour, or run any trains, freight, passenger or logging, made up of more than 10 cars drawn by a single locomotive." And they say in conclusion: "With the precautions herein suggested and enjoined, travel and transportation on this branch of the White Mountains Division of the Boston & Lowell road will be safe until the road-bed is surfaced and provided with steel rails, as already wisely planned and ordered by the Boston & Lowell road, the work to be completed before the opening of summer travel."

Bradford, Eldred & Cuba.—The Receiver of this road has made application to the court for permission to borrow money for the purpose of paying labor claims and make certain necessary repairs. The court referred the matter to a Master to take testimony.

California Southern.—Work on the grading of the extension of this road has been begun at Waterman, Cal., the junction with the Atlantic & Pacific, and also at Colton. A considerable force has been for some time employed on the heavy work through the Cajon Pass, and fair progress has been made there. Considerable cutting is required through the pass, and there will be one, and possibly two, short tunnels. If no unforeseen delay occurs the road will be completed by November next.

Cape Fear & Yadkin Valley.—Negotiations are on foot to build an extension of this road from Fayetteville to Wilmington, N. C. It all depends upon the action of the city of Wilmington. This road is seeking a deep-water outlet, and if it does not extend its line to Wilmington, it will go to Smithville or elsewhere. Grading and locating west of Greensboro are being pushed very rapidly.

Central Massachusetts.—A meeting was held in Boston, April 22, in pursuance of a call issued by 17 stockholders. It was attended by parties representing about five-sixths of all its stock. Mr. H. A. Blood, of Fitchburg, addressed the meeting at considerable length, and presented a bill which he thought they should ask the Legislature to pass, providing for the reorganization of the company as the Boston, Hudson & Western, and the raising of a fund by assessing the preferred stock $5 and the common stock $20 per share. He advocated this plan as the only practicable one for preserving the property and putting it to some use. This was followed by a great deal of discussion, some of the stockholders present opposing very decidedly the payment of any assessments on the stock, and stating that it would be impossible to collect such assessments. Finally resolutions were passed appointing a committee to confer with the officers of the company to ascertain exactly the present condition of its affairs and to report to an adjourned meeting. A committee was accordingly appointed, with Mr. William Rotch as Chairman.

The meeting was apparently called for the purpose of favoring the proposed consolidation of the road with the bankrupt Poughkeepsie, Hartford & Boston, which will involve the extension of the road to the state line. From the statements made at the meeting, it does not appear probable that the stockholders will be willing to enter into this scheme, or to contribute the money necessary to complete the road, and it is not at all likely that the money will be raised in any other way.

The board met in Boston, April 27, when the following vote was unanimously adopted:

"*Voted*, That the directors of the Central Massachusetts Railroad Co. are opposed to the plan for the reorganization of the company set forth in the resolutions adopted at a meeting of certain stockholders, held at the United States Hotel in Boston, April 22, 1885, and that the President is directed to oppose before the Legislature the passage of the proposed bill incorporated in said resolution."

Chesapeake & Ohio.—This company gives notice that the coupons due May 1 on the series B bonds will be paid one-half in cash and one-half in scrip redeemable from future earnings. This course is taken because the net earnings of the company have been insufficient to pay the entire interest. The amount of the series B bonds outstanding is $14,972,720. They are secured by a first mortgage, although the $2,279,000 purchase money funding bonds and the $2,000,000 series A bonds take precedence of them in the matter of the payment of interest.

The company's circular to the bondholders says: "The operations of the Chesapeake & Ohio Railway Co. for the six months preceding May 1, 1885 (March and April being estimated), show the following results:

Gross earnings		$1,643,253
Operating expenses		1,178,459
Net earnings		$469,794
Interest on purchase money, Series A, and 1911 bonds	$188,370	
Interest on equipment trust	26,460	
Taxes (estimated)	18,000	
Betterments (estimated)	20,000	
		252,830
Balance		$216,964

"In view of the fact that owing to the unfavorable conditions attending railroad traffic the earnings of the company, notwithstanding great economy in administration, have been only sufficient to pay about one-half part of the interest maturing May 1, 1885, on the B bonds, the question was presented for determination by the directors whether the company should attempt to borrow money to make up the deficiency; but after careful consideration the board has reached the conclusion that under existing circumstances the true interests of the holders of the securities of the company would not be promoted by the payment with borrowed money of the unearned portion of this interest installment. It has therefore been determined to pay in cash one-half part of the coupons of the B bonds falling due May 1, 1885, and to issue scrip for the remainder thereof, payable out of net earnings of the railway company above expenses and fixed charges as they accrue, all liens for the unpaid portions of coupons being preserved as security for such deferred interest scrip, as against coupon holders not accepting scrip, if any.

"Coupons are to be presented at the office of the company, Mills Building, New York city."

Chicago, Burlington & Quincy.—This company is now changing the St. Joseph & Des Moines line from St. Joseph, Mo., to Albany, 50 miles, which it purchased some time ago, from 3 ft. to standard gauge. The change has involved a considerable expenditure in putting the road in good condition. It will be ready for standard-gauge trains by May 1, when this company will put on through trains between St. Joseph and Des Moines.

A report, which has been industriously circulated, to the effect that this company has purchased the projected Chicago, Freeport & St. Paul, and would make an issue of $10,000,000 in bonds for the purpose of building that line, is contradicted by the officers of the company, who say that they have no intention whatever of building the road or of issuing any new bonds.

This company has just completed at the Aurora shops a dynamometer car, which will be used extensively on the road for the purpose of testing the performance of locomotives and ascertaining the amount of power required on the grades on different sections of the road.

Chicago & Indiana.—This company has filed articles of incorporation in Indiana for the purpose of building a railroad from Laporte, Ind., to a junction with the Louisville, New Albany & Chicago, and thence to a connection with the Chicago & Great Southern. A branch to Danville, Ill., is also proposed.

Chicago & Northwestern.—It is stated that this company has let contracts for the construction of a branch from Belvidere, Ill., on the Freeport line, south by west to Peru, a distance of about 80 miles. The contractors are Langdon & Co., of Minneapolis, and the object of the branch is to secure a supply of coal over the company's own track, the Northwestern having no coal on the line of its road in Illinois. The new line will be built under the organization of the Northern Illinois Railroad Co., and bonds of that company to the amount of $1,600,000, at 5 per cent. interest, will be issued to pay for building the road.

It is stated that the company has negotiated with Kuhn, Loeb & Co., of New York, $3,500,000 of its sinking fund consolidated mortgage bonds, due 1915, the proceeds of which are to be used to pay off underlying mortgages falling due shortly.

Delaware & Hudson Canal Co.—Albany dispatches state that a strike of the locomotive engineers and firemen on this road is feared. The trouble grows out of the recent order of the Superintendent for a general examination of the employés for defective vision, color sense and hearing. At the first examination last week, at Green Island, much dissatisfaction was expressed by the men because they were obliged to submit to the tests of colored yarns. The Brotherhood of Locomotive Engineers has held several meetings since and has, it is said, determined to resist the enforcement of the order of the company. The engineers say they are willing to submit to examinations in which the code of colored lights and signals now in vogue is used, but they regard the worsted trials as unjust. A committee representing the Rensselaer & Saratoga and the Susquehanna branches, in conference with Assistant General Manager H. G. Young, announced their position. The attitude and purpose of the company are explained by the following statement, which was read to the committee:

"*First*—The object of the examination is to determine whether the employés can distinguish readily between red and green signals, and whether they have fair eyesight and hearing.

"*Second*—The employés are to accept the preliminary examination by an officer of the company as proposed.

"*Third*—The result of this examination shall not be final in cases of deficiency.

"*Fourth*—Employés failing to pass such preliminary examination shall have a full and careful examination by a professional expert at the expense of the company.

"*Fifth*—The methods of the expert examination shall be determined by the expert.

"*Sixth*—The object of these examinations is solely to determine whether the employé is competent to perform his duties.

"Imperfections of sight or hearing or inability to nicely distinguish shades of color shall not be regarded as sufficient grounds for removal. Only absolute inability to distinguish red or green, nearsightedness or deafness shall incapacitate an employé and be regarded as sufficient cause for removal."

It was further stated that investigation into the causes of certain accidents which had occurred on the roads operated by the company had led to the belief that they were frequently due to the imperfections of sight and hearing of employés, which the examination was designed to detect; that several accidents had been traced directly to this cause, and that the company regarded the enforcement of the order for examinations as an imperative duty which it owed to the public as well as to the employés themselves; that the system of examinations had been approved by eminent oculists; and is regarded as standard; that the object of examination was to dismiss only those who were totally incapable and to place under treatment those whose vision and hearing were partially defective, so as to insure effective service, and that those who failed in the list would, so far as possible, be retained in positions which they were competent to fill. April 28, Superintendent C. H. Hammond, at Oneonta, discharged seven engineers who refused to submit to the examinations. This move of the company has created much excitement among railroad men, and a strike is regarded as almost certain. Superintendent Hammond asserts that the examination will be continued at Oneonta and that all who do not attend will be dismissed.

Denver & Rio Grande.—There are now two plans of reorganization proposed, one by the Philadelphia committee and the other by a committee appointed in New York. The members of the Philadelphia committee are Edward Lewis, Joseph D. Potts, John H. Small, John H. Converse, Samuel Gustine Thompson, Charles S. Hinchman and James S. Whitney. The names of the New York committee will be found below.

We have received the following statement of the proceedings at the meetings held in New York April 16 and 23, which, we are assured, is a correct report:

"A meeting of the consolidated mortgage bondholders was called, at the request of parties in interest, by the trustees under the mortgage, Messrs. L. H. Meyer and John A. Stewart, to be held at No. 20 Nassau street, New York, on April 16. On that day the meeting was convened, one of the trustees elected Chairman and Mr. A. Marcus Secretary. The meeting then adjourned, without doing any business, until April 23.

"On April 23, at the appointed time and place, the adjourned meeting was called to order by the Chairman and a committee appointed to ascertain and report how many bonds were represented by those present. The Committee reported that no quorum was present, whereupon the meeting adjourned *sine die* without transacting any business.

"The total issue of bonds entitled to vote is $19,715,500; necessary for a quorum $9,858,000. Those present claimed to represent only about 6½ millions—less than one-third.

"After the meeting on April 16 had adjourned, parties claiming to represent a majority in interest held an informal meeting which was presided over by Mr. John C. Bullitt of Philadelphia; Mr. Marcus, Secretary. Some resolutions were passed, and Messrs. A. Marcus, George Coppel, R. T. Wilson and Theodore Dreier, of New York, and John Lowber Welsh of Philadelphia, were appointed a committee to propose a plan of reorganization.

"A few days later an advertisement appeared in a daily paper in New York, announcing that the plan proposed by that committee could be had at Mr. Marcus' office. The notice stated that the committee had been appointed at a meeting of the bondholders at No. 21 Nassau street, on April 16, and that their proposed plan had virtually received the approval of a majority in interest. This gave many the impression that a committee had been appointed at the meeting called by the trustees.

"On April 23 the same movers established the *prima facie* right to represent only about $6,000,000 of bonds, assuming that their claims were correct and the proxies unchallenged."

Durham & Clarksville.—This company has completed its organization, and surveys of the road are to be made at once. It is to run from Durham, N. C., north by east to Clarksville, where connection will be made with a branch of the Richmond & Danville road. The distance is about 45 miles.

Eastern.—The balance due the Eastern Railroad for the year ended September 30, under the lease arrangement, was $245,689, which has just been paid over by the Boston & Maine. The lease dated back to Oct. 1, 1883, although not ratified until last fall. Of the amount paid over, $100,000 goes into the sinking fund for the redemption of the bonded debt. The stock gets nothing until the bonded debt is reduced to $10,000,000. Whether it will be so reduced by the conversion of the balance of the debt above $10,000,000 into preferred stock is quite uncertain.

East Tennessee, Virginia & Georgia.—In Atlanta, Ga., April 23, the Georgia Superior Court decided that the Receiver heretofore appointed by its authority for that portion of the road in Georgia was entitled to possession to the exclusion of the Receiver appointed by the Federal Court for the entire road. On the following day the state court Receiver demanded possession, but Mr. Fink, under instruction from the United States Court, declined to surrender, and the matter was reported to the state court for further action. A conflict of jurisdiction appears probable.

Fort Worth & Denver City.—The gross and net earnings for March, and for five months from Nov. 1 to March 31, have been:

	March.		Five months.	
	1885.	1884.	1884-85.	1883-84.
Earnings	$32,539	$31,532	$141,733	$162,229
Expenses	17,937	21,850	75,148	98,326
Net earnings	$14,602	$9,682	$66,585	$63,903

For the five months the gross earnings decreased $20,496, or 12.6 per cent., and the expenses $23,178, or 23.7 per cent., the result being a gain of $2,682, or 4.2 per cent., in net earnings.

Grand Trunk.—A dispatch from London, April 28, says that at the half-yearly meeting of its stockholders there was much discussion over the unfavorable nature of the report submitted by the directors. A motion was made that the report be rejected, but this was voted down after a long and excited discussion. The report was finally adopted, and the retiring directors were re-elected.

Lake Erie & Western.—The United States Circuit Court in Cleveland, O., has appointed a receiver for this road on suit of George J. Gourkey, of New York, who has obtained judgment on a note of the company for $320,000. It is understood that this proceeding is in the interest of the present management, and that the May interest will not be paid. The coupons which fall due April 1 are on $2,500,000 LaFayette, Bloomington & Muncie first-mortgage bonds. The present company was formed some six years ago by the consolidation of the Lake Erie & Louisville, the LaFayette, Muncie & Bloomington and the LaFayette, Bloomington & Mississippi roads. The road extends from Sandusky, O., to Bloomington, Ill., 376 miles, with one branch 10 miles long. By the latest report its funded debt consisted of $4,642,000 first mortgage bonds on the several divisions of the road, and $3,650,000 income bonds. The earnings of the road have always been light, as the greater part of its traffic is through business or from competitive points, and is carried at low rates. For the year ending June 30 last the gross earnings were $1,264,194 and the net earnings were $259,765. The interest charges, including income bonds, were $383,322. For three years past the net earnings have not been equal to the interest charges.

Louisville & Nashville.—On May 1 this company surrenders to the Western Railroad, of Alabama, the 50 miles of that road from Montgomery, Ala., to Selma, which it has leased since 1880. The lease was for five years and consequently now expires, and a Montgomery dispatch says it is not to be renewed.

Memphis & Charleston.—The gross and net earnings for March, and for nine months from July 1 to March 31, have been:

	March.		Nine months.	
	1885.	1884.	1884-85.	1883-84.
Earnings	$109,252	$111,925	$1,125,346	$1,076,275
Expenses	97,680	88,462	889,722	700,764
Net earnings	$11,572	$23,463	$235,624	$375,511

The nine months show an increase in gross earnings of $49,071, or 4.6 per cent., and in expenses of $188,958, or 26.9 per cent., the result being a decrease of $139,887, or 37.2 per cent., in net earnings.

Mexican Railroad Notes.—The following notes are from the *Mexican Financier* of recent date:

Surveys are being made for the construction of a street railroad in Linares, Coahuila.

During January and February of this year 838,507 kilos of freight were carried over the railroad from Merida to Tixkokob, Yucatan, for which the company received $1,192. The passengers transported were 854 first-class; 3,642 second-class, and 8,949 third-class. Total passenger earnings were $2,337.

Minnesota & Northwestern.—Work is being pushed on the construction of this road between St. Paul, Minn., and Cascade. Tracklaying is in progress and two construction trains are already at work.

Missouri Pacific.—Reports have been current for some time past that this company would purchase the Missouri, Kansas & Texas road, which it now leases, in the same manner as it bought the St. Louis, Iron Mountain & Southern. The statement of the plan proposed is that the present capital stock of the Missouri Pacific will be made preferred stock, to be entitled to 10 per cent. before anything is paid to the common stock. The company will then issue $15,000,000 of common stock for the purpose of taking up the Missouri, Kansas & Texas stock, at the rate of one share for three of the old stock. The Missouri, Kansas & Texas stock thus purchased will be held by the Missouri Pacific Co. in the same manner as it now holds the Iron Mountain stock. It is now said that this plan has been postponed for the present.

The hospital of this road in Fort Worth, Tex., was destroyed by fire April 26, causing a loss of about $50,000, partially covered by insurance. This hospital was used for the employés of all the company's lines in Texas. At the time of the fire it contained a number of patients, all of whom were removed, however, without injury.

Montreal, Portland & Boston.—A suit involving the question of the title of this road and the ownership of nearly all its stock and bonds has been begun by the filing of a bill in equity by the Connecticut & Passumpic River Railroad Co. against the Southeastern Railroad Co., of Canada, and the Receiver of the Vermont National Bank, of St. Albans. The bill is filed to prevent the sale of certain stocks and bonds by the Receiver of the bank," with which they had been pledged, but the Passumpsic Co. claims that it is the lawful owner of these securities.

New York Central & Hudson River.—Arrangements are being made by which the fast trains between New York and Chicago will be transfered to and from the Lake Shore at Buffalo by a cut-off or new cross-over track, and will not be run into the Buffalo passenger station. This will effect a considerable saving in time. The dining car will be run through and not brought to Buffalo as heretofore.

New York, Chicago & St. Louis.—It is reported that the Lake Shore & Michigan Southern Co. has made an offer to the Bondholders' Committee to exchange for the present first-mortgage bonds of the road a new first-mortgage bond bearing 4 per cent interest, guaranteed; holders to be given in consideration of the reduction in interest income bonds to the amount of 25 per cent. of their holdings of first-mortgage bonds.

New York & New England.—The Receiver's statement gives the following figures for March and the six months of the fiscal year from Oct. 1 to March 31:

	March.		Six months.	
	1885.	1884.	1884-85.	1883-84.
Earnings	$267,934	$259,471	$1,520,912	$1,046,513
Expenses	165,299	207,456	1,073,699	1,504,895
Net earnings	$98,635	$52,015	$447,213	$141.618
Per cent. of exps.	62.6	72.2	70.5	91.4

The six months show a decrease in gross earnings of $125,601, or 7.6 per cent., with a decrease in expenses of $431,196, or 28.6 per cent., and a resulting gain of $305,595, or 215.8 per cent., in net earnings. The gain was made entirely be reducing expenses, March being the first month for a long time which showed a gain in gross earnings.

New York, Ontario & Western.—The London and Amsterdam committees recently made a report stating that, so far, the bonds which it was supposed to issue for the purpose of paying floating debts and cancelling the preferred stock, had not been sold, with the exception of $200,000. The committees have come to the conclusion that it was advisable for them to hold the majority of the preferred stock, and for that purpose, and in order to furnish the funds necessary for the immediate payment of floating debts, they have decided to take $1,800,000 of the new bonds and to purchase $1,002,000 of the preferred stock, depositing these securities in trust and issuing against them $2,500,000 in collateral trust certificates. These certificates are offered to stockholders in London and Amsterdam at par. Under the organization of this company the holders of preferred stock elect a majority of the board, and the ownership by the committee of a majority of this stock will thus enable it to control the management.

New York, West Shore & Buffalo.—A report is current on Wall street that the New York Central & Hudson River Co. has made an offer to the Bondholders' Committee to guarantee 3 per cent. interest on the first-mortgage bonds of the West Shore road provided it is given control of the road. It is impossible to trace this rumor to any reliable source, and those who are able to give official confirmation or denial refuse to make any statement regarding it.

The statement of the Receivers for the quarter to Dec. 31, has been filed with the Railroad Commissioners and makes the following showing:

Gross earnings	$1,095,180
Operating expenses, excluding taxes	1,182,817
Deficit	$123,639
Income from other sources	11,725
Net loss	$111,911

Interest, rentals and taxes amounted to $95,307, making the total deficit for the quarter $207,218. What interest is included in this is not stated; probably only that on the Receiver's liabilities, or that actually paid.

Norfolk & Western.—This company's statement for March and the three months ending March 31 is as follows:

	March.		Three months.	
	1885.	1884.	1885.	1884.
Gross earnings	$219,321	$210,298	$645,952	$548,675
Expenses	134,245	134,083	384,514	401,080
Net earnings	$85,076	$76,215	$261,438	$247,595
Per cent. of exps.	61	64	59	62

For the three months the gross earnings decreased $2,723 (0.4 per cent.) and the expenses $16,566 (4 per cent.); the result being a gain of $13,843 (6 per cent.) in net earnings.

Northern Central.—This company's statement for March, and the three months ending March 31, is as follows:

	March.		Three months.	
	1885.	1884.	1885.	1884.
Earnings	$483,360	$462,564	$1,276,625	$1,271,023
Expenses	254,955	280,431	743,669	832,422
Net earnings	$228,405	$182,133	$532,956	$438,601
Per cent. of exps.	52.8	60 6	58.3	65.5

This shows for the three months an increase in gross earnings of $5,602, or 0.4 per cent., and a decrease in expenses of $88,753, or 10.7 per cent., the result being an increase of $94,355, or 21.5 per cent., in net earnings.

Northern Pacific.—At a meeting of the board in New York, April 23, the question of the lease of the Oregon Railway & Navigation Co. property was referred to a special committee, with authority to conduct negotiations.

At the same meeting the Vice-President reported that there were still about 140 miles of the Cascade Division to be built. Of that distance about 50 miles, 25 on each end, are nearly graded. Thus far the cost has been within the estimate, and it is believed that the entire cost of the line will not exceed the $25,000 per mile in bonds which the company has a right to issue upon it, with the exception of the tunnel at the summit, which will cost about $1,000,000, and for which special provision has been made. The entire length of the division will be 225 miles, and it is expected that it will be finished this year with the exception of the tunnel, which is two miles long and will take two years to complete, but a temporary switchback will be constructed over the mountains at tunnel so that trains can be run through.

North Shore.—An arrangement has been made under which this road, running from Montreal to Quebec on the north shore of the St. Lawrence, will be operated by the Grand Trunk and the Canadian Pacific companies jointly. A bill has been introduced in the Canadian Parliament legalizing this arrangement and providing for the joint management of the line. The North Shore road was begun a number of years ago, and after several failures was finally completed by the province of Quebec. It was operated by the government for some time and subsequently sold for $4,000,000 to a syndicate represented by Mr. L. A. Senecal. The new North Shore Co. issued $3,500,000 in bonds, which were deposited with the government in part payment for the purchase. The Grand Trunk susequently bought a controlling interest in the stock, which it now consents to divide with the Canadian Pacific. The government agrees to contribute a certain amount yearly towards the expense of operating the road and putting it in good condition.

Oregon Railway & Navigation Co.—It is now reported that a lease of this company's property to the Union Pacificand the Northern Pacific companies, jointly, has been practically agreed upon and will shortly be signed. The terms, it is said, are a rental equivalent to interest on all the company's obligations, and dividends of 5 per cent. on the stock of the company for the first year and 6 per cent. thereafter, each of the joint lessees to guarantee one-half of the rental.

A dispatch from Boston, April 29, says: "The report that representatives of the Oregon Railway & Navigation, the Union Pacific and the Northern Pacific companies would meet in Boston to-day to consummate a lease of the former to the two latter corporations jointly, turns out to have this foundation in fact: Messrs. Oakes, Harris and Stackpole, of the Northern Pacific, met with Messrs. Ames and Atkins, of the Union Pacific, in this city, to consider upon what terms they would accept a lease of the Oregon Navigation Co.'s line. They have been going over the figures relating to the Oregon Co. all day, and will continue their work to-morrow. The Northern Pacific people, who have recently investigated the condition of the Navigation Co., report that it can earn about 4 per cent. dividends. It has over $1,000,000 of floating indebtedness and $1,200,300 scrip falling due in 1886 and 1887."

Oregon & Transcontinental.—The Northern Pacific Railroad Co. has begun suit against the Oregon & Transcontinental Co. to recover the balance of $628,097 claimed to be due on settlement of accounts. The object in beginning this suit, it is stated, is to secure a final settlement of the accounts between the two companies, which are in a confused and unsatisfactory condition.

Pennsylvania.—In the United' States Circuit Court in Philadelphia, April 27, the Receivers of the Philadelphia & Reading road filed a petition asking that an order be issued prohibiting the Pennsylvania Schuylkill line from building its track at grades across the Reading line, in Reading, Pa. The Receivers claim that the new road has not taken proper proceeding in the state court to secure the right of crossing. The Court refused to make any order, but intimated that it would take further action in case the crossing in question was made without proper warrant of law. The controversy is not over the main line of the Pennsylvania branch, but over the freight track which it is building in Reading.

Philadelphia & Reading.—The Receivers' statement gives the following figures for the earnings of the railroad for March and the four months from Dec. 1 to March 31:

	March.		Four Months.	
	1885.	1884.	1885.	1884.
Earnings	$1,919,502	$2,188,144	$7,876,076	$8,683,929
Expenses	1,292,239	1,470,069	5,084,135	5,682,539
Net earnings	$627,263	$718,075	$2,791,941	$3,001,390

The decrease in gross earnings for the four months was $807,853, or 9.3 per cent.; in expenses, $598,404, or 10.5 per cent., and in net earnings, $209,449, or 6.9 per cent. The traffic reported is as follows:

	March.		Four Months.	
	1885.	1884.	1885.	1884.
Passengers	1,661,004	1,776,591	6,636,573	7,054,366
Tons freight	639 572	764,933	2,275,989	2,713,902
Tons coal	770,303	716,911	3,122,854	2,982,739
Tons coal on colliers	48,554	42,161	175,144	167,810

Both for the month and the year there was a decrease in passengers and in merchandise freight, but an increase in coal tonnage.

The statement for the Philadelphia & Reading Coal & Iron Co. is as follows:

	March.		Four Months.	
	1885.	1884.	1885.	1884.
Earnings	$1,054.468	$914.465	$3.943,700	$3.960,719
Expenses	1,068,619	1,029,665	4,108,442	4,364,473
Deficit	$14,151	$115,200	$164,742	$403,754

This shows for the four months a decrease in gross earnings of $17,019, or 0.4 per cent., and a decrease in expenses of $256,031, or 5.9 per cent.; the result being a reduction of the deficit by $249,012, or 59.2 per cent.

The coal mined from the company's lands was:

	March.		Four months	
	1885.	1884.	1885.	1884.
By company	306,809	245,249	1,229 928	1,063,491
By tenants	50,793	56,241	205,354	243,822
Total	357,602	301,490	1,435,282	1,307.313

Here there was an increase, both for the month and for the year.

The joint net earnings of the two companies compare as follows:

	March.		Four months.	
	1885.	1884.	1885.	1884.
Net, R. R. Co	$627,263	$718,075	$2,791,941	$3,001.390
Deficit, C. & I. Co	14,151	115,200	164,742	403,754
Total net	$613.112	$602,875	$2,627,199	$2,597,636

Increase for the month, $10,237, or 1.7 per cent.; for the year, $29,563, or 1.1 per cent. As the expenses do not include any charges for interest or rental, the net earnings are the amounts from which all such payments must be made.

Pittsburgh & Northeastern.—This company has filed articles of incorporation to build a railroad from Port Perry, near Pittsburgh, to Punxsutawney, the southern terminus of the Rochester & Pittsburgh road. The distance is about 65 miles.

Pittsburgh & Western.—The United States Express Co. has made application to the Court to enjoin the Receivers from canceling contracts heretofore made for the express business. The express company complains that it has been deprived of the privileges which it has heretofore had on the road, the business being given to the Baltimore & Ohio Express.

Portland & Ogdensburg.—The suit against this company in New Hampshire was brought in the United States Circuit Court by the Mercantile Trust Co., of New York, as holder of the bonds secured upon the road in that state. It is now understood that the company has sold those bonds, and the counsel representing it have retired from the case. It is not understood that this will make any difference in the conduct of the foreclosure suit, which is now in the hands of the trustees under the mortgage.

The trustees have recently filed a petition that the Receiver be allowed to issue and sell $40,000 in certificates in addition to the $190,000 already issued. The Court will hear argument on the petition on May 12.

Pullman's Palace Car Co.—The repair shops owned by this company at Elmira, N. Y., which have been closed for several years past, have been reopened, and the repair work which has heretofore been done at the Philadelphia shops will be taken to that point. It is said that the Philadelphia repair shops, which were recently burned, will not be rebuilt, but the works will be permanently maintained at Elmira.

Rochester & Pittsburgh.—The Court has referred the report of the Master in the foreclosure suit back to him for amendment, considering that, on some points, it was not sufficiently explicit. The amended report will soon be filed.

Scioto Valley.—A proposition was recently made for the issue by this company of general mortgage bonds, bearing 4 per cent. interest, to an amount sufficient to fund all the indebtedness of the company, including the first, second, and consolidated mortgage bonds and the floating debt, with sufficient surplus to provide for needed improvements of the road and additional equipment. The proposition meets with a great deal of opposition among the holders of first-mortgage bonds, who do not wish to give up their prior lien upon the road, regarding the property as sufficient security for their claims, while they think that the proposed consolidated mortgage would be a somewhat doubtful security.

Shenandoah Valley.—A meeting of the bondholders was held in New York, April 27, about one-half the amount of the bonds being represented. A committee of 7 members was appointed, with instructions to take immediate steps to protect the interests of the bondholders. The committee consists of E. N. Howell, J. P. Ilsley, Joseph Leedom, H. W. Brown, Philadelphia; George C. Wood, O. J. Morris, New York, and C. L. Lamberton, Wilkes-Barre.

South Pennsylvania.—At a special meeting of the directors in Philadelphia, April 27, President Sayre stated that the work on the road could be completed and the line equipped for the amount already subscribed. He further reported that he had recently inspected the road, and was satisfied that the grading and track-laying could be finished about the time of the completion of the longest tunnel. This tunnel is to be ready for use, under the contract, by July 1, 1886.

Texas & St. Louis.—The United States Circuit Court has issued a decree of foreclosure and sale on the section of this road in Texas. The decree is issued in the suit brought by the Central Trust Co., trustee under the first mortgage, and the order of sale will be made and the time fixed for the sale as soon as the Master can make the necessary reports.

Thorn Creek.—This company has been incorporated in Pennsylvania to build a railroad from Thorn Creek in Butler County to a junction with the West Penn. Division of the Pennsylvania Railroad, a distance of 12 miles.

Tonawanda Valley & Cuba.—An application of the Receiver of this road for permission to issue receiver's certificates, paying back-wages and other claims, has been referred by the Court to a Master for examination.

Utica & Black River.—This company's statement for the quarter ending March 31 is as follows:

Gross earnings	$167,668
Expenses	98,560
Net earnings	$69,108
Other income	1,262
Total	$70,370

Taxes are not included in expenses. Interest, rentals and taxes amounted to $41,307, leaving a surplus of $29,063 for the quarter.

Wabash, St. Louis & Pacific.—Dispatches from London state that the Bondholders' Committee there has adopted a plan of reorganization. The full details of the plan have not been received, but its leading features are understood to be an assessment of $5 per share on preferred and $6 on common stock, the proceeds to be used in paying off the floating debt and the collateral trust loan. It also includes the issue of new 5 per cent. bonds for the present $17,000,000 general mortgage bonds; the interest on these new bonds to be paid if earned and to be accumulated, but the right of foreclosure to be suspended for 7 years.

As noted last week, the order of the Court to the Receivers to continue the operation of all the leased lines is evidently not intended to apply to those cases where application is made for the foreclosure of separate mortgages on those lines. In pursuance of this policy the Receivers have, by direction of the Court, surrendered the Cairo Division to the trustees under the first mortgage on that division, who are now prosecuting proceedings in foreclosure. This division extends from Tilton, Ill., near Danville, to Cairo, 255 miles, and it will be hereafter operated by the Receivers under the title of the Cairo, Vincennes & Chicago line.

The men employed in the shops at Moberly, Mo., struck April 24, in consequence of an order reducing the hours of labor and closing the shops for several days. They claim that this order is a violation of the agreement made with them at the close of the recent strike against the reduction in wages.

West Jersey.—This company makes the following statement for March and the quarter ending March 31:

	March.		Three months.	
	1885.	1884.	1885.	1884.
Earnings	$82,403	$82,492	$209,468	$218,978
Expenses	46,269	50,745	147,383	136,626
Net earnings	$36,134	$31,747	$62,085	$82,352
Interest, rentals, etc			49,859	53,787
Surplus			$12,226	$28,565

For the nine months there was a decrease in gross earnings of $9,510, or 4.3 per cent., a decrease in net earnings of $20,267, or 24.7 per cent., and a decrease in the surplus of $16,339, or 57.1 per cent.

Tracklaying is to be begun at once on the second track from Glassboro, N. J., to Franklinville, 6 miles, the grading on this section being already finished. Grading for the second track is to be continued from Franklinville to Newfield, the junction of the branch to Atlantic City.